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The Journal of the International College of Surgeons

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THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS

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Material: Scientific articles and communications on matters of surgical and related interests are invited. These must be submitted to the Editorial Board, which reserves the right to reject any material deemed unsatisfactory. All manuscripts are subject to editorial modification.

Scientific Papers: The publication of scientific papers in the Journal is not limited to the Members and Fellows. Any surgeon may submit original contributions, which will be considered by the Editorial Board for acceptance. Thus, while the Journal is the official organ of the International College of Surgeons, it is also an open forum for the expression of contemporary surgical advancement, thought and research. There is no discrimination as to those who may submit original papers; it is the scientific value of the contribution that determines its acceptability for publication.

Article I, Section V, of the Constitution of the College reads:

"It is strictly non-sectarian and non-political; it is decidedly against arbitrary restriction of merit and is free from prejudices, and will recognize the SURGEON and his accomplishments, and will not be influenced by his financial, political and other irrelevant status."

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Two carbon copies should accompany the original paper. A summary must be given at the end of the article.

Contributions in a foreign language should be sent to Prof. Rudolf Nissen, Divanyolu, 105, Ortaköy, Istanbul, Turkey.

Anonymous contributions of any and all sorts will not be published.

Illustrations: These should be numbered and the legend written on the back, with the title of the article, and the top of the picture should be indicated. Glossy paper produces the best halftones. Charts drawn for reproduction should be made in black India ink; legends should be typewritten at the end of the manuscript.

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For information about membership in the International College of Surgeons and other matters pertaining thereto, address Dr. Charles H. Arnold, 908 Terminal Building, Lincoln, Nebraska.

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News Items: The Journal will be pleased to publish personal news and all items of interest. Items dealing with appointments to hospitals and medical schools, activities of meetings, etc., if considered by the editors to be of sufficient interest, will be included in the columns of the Journal. Such items may be sent to the Editorial Office, 850 West Irving Park Boulevard, Chicago, Illinois.

Editorials

DRAINAGE IN ACUTE APPENDICITIS

"Disguise it as you will,
To right or wrong 'tis fashion guides us still."

NO MORE than a meager knowledge of the history of our art is necessary to convince us that this precept is true of many forms of medical treatment as practiced from the dawn of time down the ages to the present day. The vast majority of doctors are content to follow blindly the fashion of the moment in the treatment of disease, without pausing to reflect whether it is guiding them rightly or wrongly. When this fashion is based on sound fundamental premises, it guides them rightly, and they are justified in adopting it by the results which they obtain; when, on the other hand, it springs, like fashions in dress, merely from a desire to try something new, it usually guides them wrongly, and much harm may be done before it is abandoned and the form of treatment displaced by it comes back once more into grace.

A fashion of the present day is to restrict the use of the drainage tube in the treatment of acute appendicitis. Many papers have been published, in recent years, in which it has been suggested that the use of this tube brings in its train dangers almost greater than those associated with the disease itself, and that, in many cases, its sole value is its hypnotic influence on the surgeon. It has been stated that the presence of a drainage tube increases the incidence of such complications as residual abscess, fecal fistula and intestinal obstruction and that it is not necessary to employ drainage even in cases in which the appendix is gangrenous or has perforated. Though it is true that the authors of these papers have been careful to mention various indications for drainage in this disease, the general effect of their work has been to give rise to a widespread belief that it is tantamount to a confession of surgical incompetence to drain the abdomen after the removal of an acutely inflamed appendix.

A recent review of one thousand cases of acute appendicitis treated at the Royal Melbourne Hospital showed that, though the dictum, "when in doubt, drain" was generally adopted, a tube having been used in 38.4 per cent of the total number of cases, this policy was temporarily abandoned after the publication of one of the papers opposing this practice. The results were immediate and catastrophic in that there ensued residual abscess in two cases, peritonitis with ileus in one and pylephlebitis in one. Three of these four patients died and, though it is possible that the results would not have been improved by the use of a drainage tube, there is no doubt that the surgeons responsible would have been happier had they enjoyed the "hypnotic influence" of its presence. This review also showed that the incidence, after drainage, of fecal fistula was 1.3 per cent, that of residual abscess 1.5 per cent and that of intestinal obstruction 0.5 per cent. In two undrained patients fecal fistula occurred and in two residual abscess. It therefore appears that the risks following the introduction of a drainage tube have been greatly exaggerated and that

this method can be employed without fear that its disadvantages will outweigh the undoubted advantages which accrue from its use.

It is probable that some of the complications attributed to the presence of a tube are due to improper use of this device. The practice of progressive shortening of the original tube may be followed by the development of a residual abscess in the lower part of the tract from which the tube has been withdrawn by the shortening process. This can be obviated, and the effect of lateral pressure exerted by the tube on surrounding structures overcome, by adopting the procedure of replacing the tube, after forty-eight hours, by another tube, of equal length but half the diameter. This tube is replaced, after a similar time, by a third, which is about the diameter of bicycle valve tubing, and is finally withdrawn when the condition of the patient warrants it.

Though, as C. Jeff Miller wrote, the mortality from acute appendicitis remains "a menace to the public, a disgrace to the profession and a challenge to those of us who practice the science and art of surgery," it does not appear that this state of affairs will be remedied by impugning the drainage tube. It is to be hoped, therefore, that the present fashion of nondrainage will soon be outmoded and that an improvement in the mortality figures of this disease will be achieved, not by the dangerous policy of abandoning proved methods of treatment, but by a more widespread education of the public that delay is dangerous, and by advising early exploratory operation in doubtful cases. Finally, it would help very much in this direction if the operative treatment of acute appendicitis, which is frequently difficult, ceased to be the function of almost every member of our profession and was restricted, whenever possible, to those men who have proved themselves competent to undertake surgical work.

SIR ALAN NEWTON, M.S. (MELB.), F.R.C.S. (ENG.), F.R.A.C.S., F.A.C.S.,
Melbourne, Australia.

STATE IDOLATRY AND THE A. M. A.

HERE and there in Medical Journals as well as in the lay press, we have had occasion to read favorable and unfavorable comments on the activities of the American Medical Association. Of the out and out opponents, the physician, who has followed all the activities of the Association in the fields of medical education, legislation and public health and observed the constant stimulus given by its publication and meetings to the advancement of medical knowledge, can well disregard the adverse opinions, which are either inspired by socialistic attempts to debase medical practice or by the forlorn hope of the quasi-medical sects to achieve parity with scientific medicine by bringing it down to their level of culture. Also we should not underestimate the great contribution to therapeutic progress which can be traced to the work of the Council of chemistry and pharmacy.

The observation,which is amusing and distressing at the same time, is, that some medical editors, while rejoicing in the results achieved, seem to be reluctant to have to acknowledge their debt to the Association and to Dr. Fishbein. Here and there there are those who believe that many of the functions of the Association should be taken over by the State.

It is very difficult to see how the State could have surpassed the achievements of the Association, particularly in the last quarter century.

Without entering for a moment into the speculation as to whether the state

could do better than the A. M. A., it seems the part of wisdom to be grateful for what Fishbein and the A. M. A. actually have accomplished in the many problems confronting the future of medicine. It is hardly conceivable that any governmental agency could have done more. A multiplicity of evils is not eliminated by a miraculous fiat. Steady, ever expanding effort is necessary. The cooperative loyalty of the profession is of paramount importance. For our part we wish that men like Fishbein could be parthenogenetically multiplied; the profession could use a few thousand of them to good advantage.

VINCENT A. LAPENTA.

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INQUIRIES ABOUT PAPERS, ETC., SHOULD BE ADDRESSED TO DR. CHARLES H. ARNOLD, SECRETARY OF THE SCIENTIFIC ASSEMBLY, 908 TERMINAL BUILDING, LINCOLN, NEBRASKA.

—o—

THE NATIONAL ASSEMBLY OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS WILL BE HELD FEBRUARY 11 TO 14, 1940, AT VENICE FLORIDA, UNDER THE DIRECTION OF INTERNATIONAL PRESIDENT-ELECT DR. FRED H. ALBEE AND THE PRESIDENCY OF DR. FREDERICK M. DOUGLASS.

—o—

APPLICATIONS FOR ASSOCIATE MEMBERSHIP, MEMBERSHIP AND FELLOWSHIP IN THE INTERNATIONAL COLLEGE OF SURGEONS MAY BE ADDRESSED TO DR. CHARLES H. ARNOLD, 908 TERMINAL BUILDING, LINCOLN, NEBRASKA. THESE WILL BE ACTED UPON IN THE REGULAR ROUTINE AS OUTLINED IN THE BY-LAWS. APPLICATIONS FOR CONSIDERATION MUST BE RECEIVED NOT LATER THAN A MONTH PRECEDING THE REGULARLY STATED ASSEMBLY MEETING.

AN APPEAL

OUR regent for China, Dr. J. C. McCracken, apprises us that the war in China for the last two years has created a great deal of distress and suffering. All universities but one have been uprooted and moved a thousand miles west, or are carrying on partial programs in temporary quarters in Shanghai. Despite this, students are clamoring to be admitted to the university. Heretofore not more than 20 students have been admitted each year to the freshman class, but this year the faculty has made a special ruling that 30 may be admitted provided the necessary equipment and personnel can be provided.

To carry out this program, more microscopes and equipment are needed. Dr. McCracken appeals for a helping hand.

At a meeting of the Council of the United States Chapter of the International College of Surgeons, $140, the price of one microscope, were contributed by the members of the Council and sent to Dr. McCracken. Anyone who has a microscope not being used or who wishes to aid in this fine work may send his gift to **Dr. John Wood, 281 Fourth Avenue, New York City,** or to **Dr. Alexander Peacock, Stimson Building, Seattle, Washington**, who will forward it to Dr. McCracken. Checks should be sent directly to **Dr. J. C. McCracken, Dean of the Pennsylvania Medical School, St. John's University, Shanghai, China.**

Dr. McCracken concludes his appeal by stating: "The crying need in China today is for more and better trained doctors, and no matter what happens, the need will still be great five years hence, when the class entering this fall graduates. Many of our Alumni are now back of the lines doing everything possible to help care for the sick and wounded, who are giving their lives in this terrible struggle for freedom. More are going this week, one of whom is our resident surgeon in St. Luke's No. 2, making three surgeons we have sent from our hospital. The Surgeon General of the Chinese Army is one of our graduates, as is also the head of the National Health Administration. Let us give to help train men and women to save lives, rather than be responsible for the bullets and bombs that destroy."

This is a worthy cause and merits the support of the members of the International College of Surgeons.

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SURGERY OF CAROTID BODY TUMORS*

R. W. McNEALY, M.D., F.A.C.S., F.I.C.S.

AND

R. F. HEDIN, M.D.

CHICAGO

CAROTID body tumors, long considered rare, have been reported in the literature with increasing frequency during the past few years. Many cases of these tumors undoubtedly have not been recorded but Sonck[1] in 1937 was able to collect 236 cases of carotid body tumors.

The first anatomic description of the carotid body was by Von Haller in 1743. He termed it the "ganglion minutum." Subsequently, Newbauer in 1786, Andersch in 1797 and Luschka in 1862 made contributions to our knowledge of this gland.

ANATOMY

The normal carotid body is approximately the size of a millet of wheat and is located at, or near, the bifurcation of the common carotid artery. Its exact location with reference to the crotch of the carotid is extremely variable. It may be absent on either or both sides. The gland generally increases in size up to the age of 30 years after which it remains stationary[2] and the glandular structure is replaced by connective tissue elements. A fibrous band called the ligament of Mayer holds the carotid body to its saddle-shaped bed and through this attachment it receives its blood supply. There is a definite fibrous capsule surrounding the gland which is continuous with its ligamentous attachment. Microscopically the carotid body is divided into lobules by fibrous septa. This fibrous network is composed of medullated and nonmedullated nerve fibers which encircle groups of large polyhedral cells. These cells which comprise the lobules vary in size and have no regular arrangement. Cells which have affinity for the salts of chromium have been found scattered throughout the gland. The gland is exceedingly vascular and large sinusoids are present within it.

EMBRYOLOGY

The many varieties of cellular elements found in the carotid body have caused dispute as to its origin. As one or the other of its elements has been emphasized by different investigators, so have been formulated the various theories concerning its origin. Three principal genetic elements are suggested: epithelial, vascular and nervous. The opinion that the pharyngeal epithelium might serve as a precursor is usually discredited. The latter two theories are supported by the fact that the development of the carotid body is intimately bound with the differentiation of the third aortic arch of the embryo which is the anlage of the internal carotid artery.[3] The carotid artery is supplied by a very characteristic branch of the glossopharyngeal nerve which is embryologically and comparatively the nerve of the third arch. Branches of the vagus and hypoglossal nerves and the cervical sympathetic ganglia also are present in the carotid body which are thought by many to be brought to this region by growth changes during the development of the third aortic arch. The presence of nerve cells which are

*Read at the International Scientific Session of the International College of Surgeons, New York, May 23, 1939.

stained by potassium salts demonstrating chromaffin bodies have caused many investigators[4] to believe that the carotid body originates from nerve tissue and belongs to the paraganglionic system. Because of the variety of cellular elements, Smith[5] believes "that we are dealing, not with a simple organ, for example, one derived from a single outpushing or down-pocketing of an epithelial tube, but a complex one, the components of which have been brought together by processes dependent on the developmental history of the region."

PHYSIOLOGY

As yet no function has been attributed to the carotid body. It is known that the removal of one carotid body does not stimulate the growth of its fellow. It is also true that individuals have been unaffected by removal of both carotid bodies.[6] Moulon found that an extract made from the carotid bodies of horses caused a rise in blood pressure when injected into rabbits. Vassale claimed that when the carotid body was removed in cats, glycosuria developed. Fischer found that when the carotid bodies were removed from cats, a condition not unlike osteomalacia developed. DeCastro removed the carotid bodies at autopsy and was unable to find adrenalin, despite the chromaffin-like material present. Chase[7] states, "It may be that the material which gives the chrome reaction in the carotid bodies is either an adrenalin-building substance, or a substance closely related to adrenalin which does not give its specific histochemical reactions."

PATHOLOGY

Various terms have been used to describe these tumors such as "perithelioma," "paraganglioma," "neuroblastoma," and "sarcoma," depending on the presence of the predominate tissue element. At the present time most authors prefer to call these growths "carotid body tumors."

Tumors of the carotid body vary in size. Often they are approximately the size of a small potato and have been called "submaxillary potato tumors."[8] O'Shaughnessy[9] reported the removal of a carotid body tumor which was the size of a large grapefruit from a Sudanese. When seen at operation, these tumors appear globular and have a thin capsule. They are of rather firm consistency, but their most striking feature is their extreme vascularity. On section they are grayish red or slightly brownish tan (from chromaffin substance in specific cells). Markings show vessels, plexiform cell masses, concentric structures and hyaline areas. Microscopically, the tumor presents somewhat the appearance of an alveolar perithelioma.[10] The cells are polyhedral, granular, and may contain chromaffin substance. They are arranged in compact groups, without lumens, and are surrounded by numerous capillaries, which manifest hyperplastic endothelial linings. Many larger cell groups have been observed, the central portions of which are prone to degenerate and form cavities in which blood may be found. Definite capillaries may also traverse the cell groups. Hyaline degeneration of cells gives rise to intracellular globules, and affecting the stroma this process produces peculiar knobs, which project into the capillaries. The numerous vessels may produce a cavernous tissue or they may be much reduced into a hard tumor. They are lined by prominent endothelial cells which sometimes grow out into the vessels into symmetrical buds, or mingle with the chief cells of the tumor, producing complex pictures. The stroma may be scanty or acellular, hyaline, or infiltrated with tumor cells.

Bevan and McCarthy,[11] in their excellent report in 1929, found the incidence of malignancy to be 17 per cent in 134 cases. Rankin and Wellbrock,[12] in reporting 12 cases, found 6 to be malignant. Regional nodes are often involved

in the growth process, but distant metastases are rare. Following excision, local recurrences have been reported. Bilateral tumors are exceedingly rare.[13]

The distribution of carotid tumors is approximately equal between males and females. The youngest case reported was seven years of age and the oldest 73. Most cases which are reported occur in the third or fourth decades of life. These tumors have been found in both white and colored races. Familial tendencies have been recorded only once in the literature. Chase[7] reported operating on two sisters, each having a carotid body tumor.

DISCUSSION OF PATHOLOGY

In this series of four carotid body tumors the same elements are present, only in widely varying proportions. Some variation of arrangement is probably a factor of the state of hyperplasia. In three of the tumors the common arrangement of the large polyhedral cells is that of small alveolar units, and most of these units are surrounded or bordered by narrow, thin-walled blood vessels or capillaries which broaden out at intervals to form sinusoidal blood spaces. In many places there is no demonstrable support for the widely separated endothelial cells of the capillaries, but in more typical areas a delicate connective tissue stroma can be seen between the endothelium and the alveolar structures. Occasionally this stroma is accentuated, apparently in response to inflammatory changes.

In tumors showing the least degeneration, hyaline masses are not numerous and are widely separated. The Bodian and Davenport silver stains failed to demonstrate more than an occasional nerve fiber in any of the tumors. Weil[14] states that this absence of nerve fibers is real and that in Masson's[15, 16] early observations, without the advantage of silver stains, hyaline strands were interpreted as nerve fibers. Failure of prompt fixation in Zenker's or Orth's fluid probably accounts for our failure to demonstrate definite chromaffin granules in the polyhedral cells. Where granules were observed in one case they were present with vacuolated cytoplasm and appeared to be a part of a parenchymatous degeneration of the cells. All other elements and variations in the proportion of the above mentioned elements can be accounted for by the degree of degeneration found in these tumors. The granular and vacuolated cytoplasm has already been mentioned as a parenchymatous degeneration. Some of the polyhedral cells are greatly swollen in the early stages of degeneration and appear as very large mononuclear or binucleated cells which may be called giant cells. The eventual and common changes in the polyhedral cells resulting from degeneration are shrinkage and condensation of both cytoplasm and nucleus. The nuclei are deeply stained with hematoxylin, irregular and pyknotic, and there may be a combination of the nuclei in a pool of condensed or syncytial cytoplasm to form degenerated giant cells. The nuclei in most cases remain discreet and become progressively smaller and as they fade away the remaining syncytial cytoplasm becomes a part of the hyaline masses. In this connection it is interesting to note that where there is the most degeneration there is the most hyaline material in practically direct proportion. Some writers have ventured to state that hyaline material is most abundant about the blood vessels. It is true that most of the larger blood vessels are surrounded by hyaline material, but it is also true that most of the hyaline material bears no direct relation to the blood vessels. Only endothelial and connective tissue elements remain in the hyaline masses to bear witness of the former structure.

In portions of some of the tumors there is rather extensive hemorrhage

outside of the capillary walls which has apparently taken place by diapedesis. Abundance of blood pigment is present in the same location in portions of the tumors and is evidence of injury to the capillary walls rather than a part of a physiological process. Hyperplasia of endothelium has not been observed in any of the tumors, although there was a definite increase of connective tissue stroma in one of the tumors which contained inflammatory infiltration. This increase in connective tissue was not observed in the other cases where degeneration appeared to be not the result of inflammation. The hyaline knobs described by Kaufman were observed in only a limited portion of one tumor, and even in this area there was no more than an incidental relation to the capillaries.

It is probably more important and accurate to interpret the varied histological pictures in terms of pathological changes than to attempt to affix an important physiological function to such a complex histological structure. If these are true tumors, a complex orderly histological structure could not be expected, and on the other hand, if their physiological function were so important, it would be reasonable to expect the tumor to be more common, perhaps paralleling changes in other glands known to be actively functional. Practically nothing has been advanced as proof of the physiological importance of these tumors, although glaring conclusions are based on the histological structure. The term chromaffin tumor and paraganglion tumor are both descriptive of histological structure and suggestive of physiological function but leave us suspended in mid air as to any fundamental truth. Too much has been assumed on the basis of histological similarities without proper chemical and physiological confirmation.

If we assume a physiological function of these tumors, then enlargement of the carotid gland could be interpreted as an increased demand on the part of the body for its product. This would make easily explainable the varied histological pictures in degeneration or involution of the gland when this demand was lessened. In this light such terms of designation as perithelioma of the carotid gland, which is a name of a true tumor, would be misleading.

DIAGNOSIS

The diagonsis of this tumor is seldom made pre-operatively.[17] Lipoma, tuberculous adenitis, branchial cyst and aneurysms[18] are conditions to be considered in the differential diagnosis. The location of carotid body tumors is usually at the level of the bifurcation of the common carotid artery opposite the level of the thyroid cartilage. Occasionally, they are some distance removed from the usual site, as in the case reported by Sheehan and Robiner[19] in which the tumor was located in the parotid region and attached by a long pedicle to the bifurcation of the common cartoid. The growth is usually ovoid or potato-shaped and is partially covered by the sternocleidomastoid muscle. Movement can be elicited from side to side but the tumor cannot be moved up and down due to its attachment to the large vessels. The overlying skin is not adherent, and when the tumor is moderately large a nonexpansile pulsation is felt. Because of the vascularity a bruit can often be heard over the region. Bulging into the pharynx has been noted in the larger tumors. Laboratory tests as well as roentgenograms are of no direct aid in making a pre-operative diagnosis.[20]

All carotid body tumors are characterized by a slow rate of growth. The patient notices a swelling which is painless. Over a period of months or years there is an increase in size. Relief is often sought only for cosmetic reasons. At times pain is experienced on movement of the neck or in lifting heavy objects. Fatigue brings on a dull pain at

the site of the tumor. Syncope,[21, 22] hoarseness and dysphagia may be caused by pressure of the tumor on adjacent structures.

TREATMENT

The treatment of choice in this type of tumor is surgical removal. However, this should be done only when operation does not endanger the patient's life. The feasibility of removal of carotid body tumors depends on the relation and adherence of the tumor to the carotid vessels,[23] namely, the common, internal and external. The mortality following ligation of the common or internal carotid arteries, combining all age groups, carries a mortality of above 30 per cent.[24] LeFort[25] has placed the percentage of cases in which the brain is affected following ligation of the common carotid at 54.5. Freeman states, however, that cerebral manifestations occur in only 20 to 25 per cent. The discrepancy in statistics is probably to be explained on the basis of variation in age groups. Ligation of the external carotid artery can usually be accomplished without danger. With these criteria in mind it seems best to remove only those tumors which can be dissected out without the necessity of ligating the common or internal carotid arteries.[26] Unfortunately, the necessity for ligation of either of these arteries cannot always be foreseen and often such a procedure is carried out as the only means of controlling hemorrhage. If it is determined at the onset of the dissection that the tumor cannot be removed without sacrificing either of these arteries, the procedure should be discontinued and the tumor treated conservatively.

Bevan and McCarthy[11] reported a case as cured by the use of x-ray therapy. As yet this form of treatment has not been tried sufficiently for an opinion to be formed as to its value.

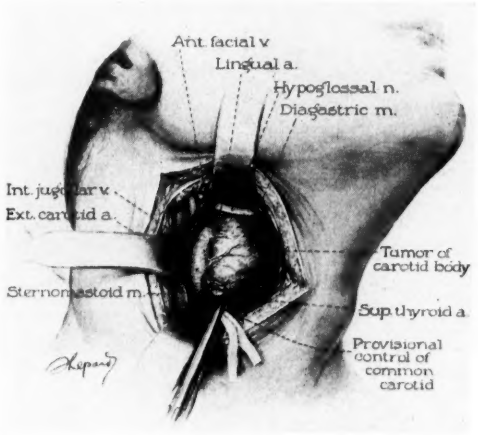

Fig. 1. Incision and exposure of carotid body tumor.

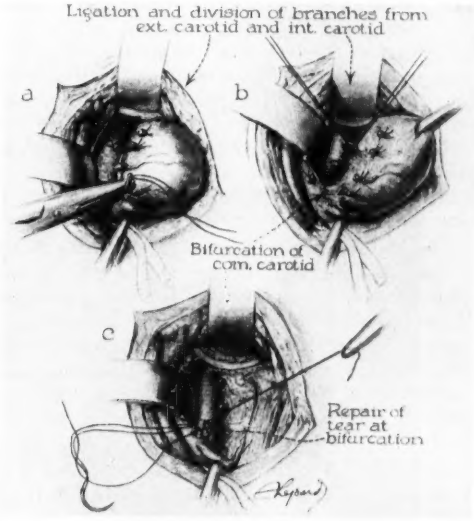

Fig. 2. *A*, ligation of individual vessels going to the carotid tumor. *B*, external carotid retracted and internal carotid brought into view. *C*, suture of crotch is commonly necessary because of firm attachment at this location.

REPORTS OF CASES

CASE 1. Mrs. O. C., white, age 42, entered Wesley Memorial Hospital November 18, 1937, complaining of swelling on both sides of her neck. She first noticed the swellings, which were associated with a sore throat, 14 years previously. Following this acute infection, the swellings remained about the size of a plum on each side of the angle of the mandible. A tonsillectomy was performed 10 years ago with no diminution in the size of the swellings. Since that time the swelling on the right side of the neck had remained about the same, while the swelling on the left side had increased to the size of a lemon. Six weeks prior to admission the patient experienced pressure sensations, associated with pain radiating into the occipital region, on both sides of the neck. She had noticed also a definite pulsation in both regions which began with the onset of the pain.

On examination a mass measuring 5 by 3 cm. was present below the angle of the jaw at the level of the thyroid cartilage. The skin overlying the tumor was not adherent. The tumor could be moved from side to side with ease but was not movable vertically. No pain was experienced on palpation. No bruit or thrill was present.

The tumor on the left side of the neck was larger, measuring 8 by 4 cm., and was lobulated. This mass also was movable from side to side but not up and down. The mass could be compressed and after a few seconds it gradually enlarged to its former size. No pain was present on palpation. A thrill was palpable and a bruit was present over the tumor. The remainder of the physical findings were essentially normal except for a moderate hypertension, blood pressure being 164 systolic, 98 diastolic.

Roentgenograms of the cervical region and chest were negative. Urine analysis, blood counts and serology were negative.

The patient stated that her brother had a similar swelling on one side of his neck. This man could not be persuaded to be examined nor would he send a photograph so that an idea could be gained as to the nature of the tumor.

On December 2, 1937, the small tumor on the right side was explored through a transverse incision (fig. 1). A highly vascular tumor (fig. 2) was located in, and was adherent to, the bifurcation of the right common carotid artery. There were numerous vessels communicating with both the internal and external carotids. These were ligated and divided. After a careful and tedious dissection the gland was removed (fig. 2*c*). However, near the end of the dissection a rent, 1 cm. long, was found in the bifurcation near the attachment of the tumor. This was sutured with a continuous silk suture and the hemorrhage controlled. A branch of the hyperglossal nerve was involved in the tumor and was removed with it.

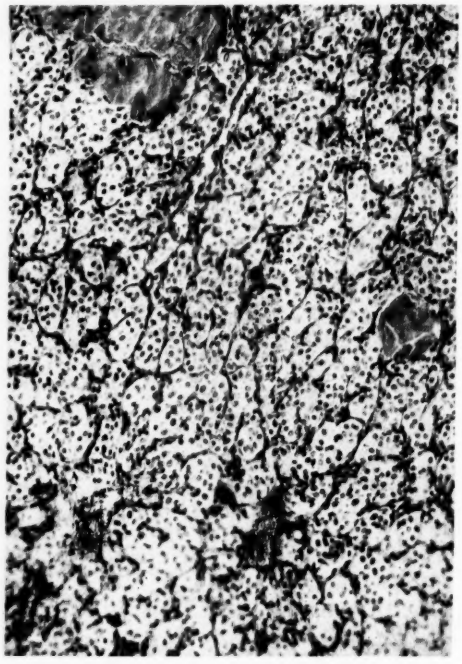

Fig. 3. Characteristic arrangement of compact groups of cells interspersed with numerous capillaries.

The convalescence was satisfactory except for impaired movements of the tongue. The patient was discharged on the eighth postoperative day, the wound healing by primary union.

The specimen (fig. 3) was examined by Dr. E. R. Strauser and diagnosed as carotid body tumor. The patient has refused operation for the removal of the tumor from the left side because she no longer has discomfort. This case is of interest because it undoubtedly is one of bilateral carotid body tumor and the familial tendency is inferred if not proven.

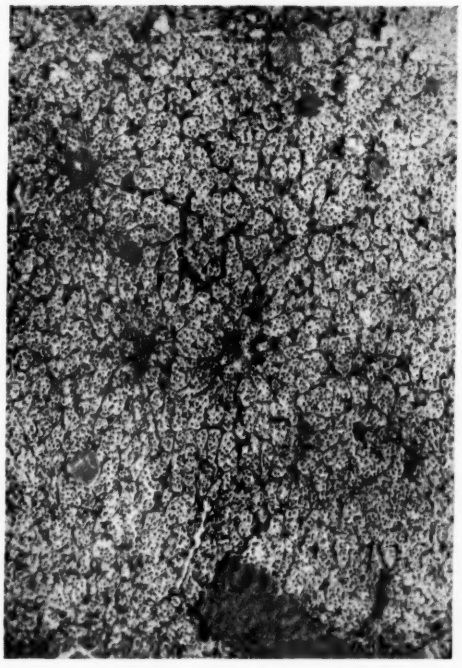

Fig. 4. High power section showing large polyhedral cells arranged in small alveolar units.

CASE 2. Mrs. M. W., white, age 22, was admitted to Wesley Memorial Hospital January 7, 1938 complaining of a swelling on the right side of her neck which had been present for three years. The swelling had not caused symptoms and the patient was unaware of the gradual increase in size of the tumor, until it was noticed by her family. The past year the tumor had markedly increased in size. During this period the patient noticed that when she was tired the tumor became painful. Pain was also present when she rotated her head to the left side.

Physical examination was essentially negative except for the swelling on the right side of the neck. The tumor was 5 by 3 cm. in size and was located in the anterior triangle of the neck at the level of the thyroid cartilage. It was soft and compressible and could be moved from side to side but not up and down. It was not tender; no thrill was felt and no bruit was heard. On compression there were no changes in blood pressure, heart rate or pupillary reflexes. A diagnosis of right carotid body tumor was made.

On January 11, 1938, under general anesthesia, the right side of the neck was explored through a transverse incision (fig. 1). The tumor was found in the bifurcation of the right common carotid artery. It was the size of a hen's egg and was highly vascular. Numerous communicating vessels between the large vessels and the tumor were divided and ligated. In removing the tumor a rent was again made in the bifurcation. This, too, was closed by a continuous silk suture. Hemorrhage was controlled and the incision closed.

The specimen was examined by Dr. E. H. Strauser and the diagnosis made of carotid tumor (fig. 4).

The patient was discharged from the hospital on the seventh day postoperatively, the wound having healed by primary union.

Fig. 5. Photograph showing a bilateral carotid body tumor.

CASE 3. Mrs. L. P., white, age 50, entered Wesley Memorial Hospital November 10, 1938, complaining of painful bilateral swellings on the neck. The patient stated that 19 years ago she noticed a swelling the size of a bean in the right side of her neck. The swelling gradually increased in size. Ten years ago the patient noticed that the mass "pulsated." During the past five years, in addition to the gradual growth and pulsation of the tumor, the patient began having pain which radiated into the shoulder.

The swelling in the left side of the neck was first noticed about 10 years before admission. This tumor had also gradually increased in size. During the past five years both tumors had become larger and more painful. The pain was described as "continuous dragging pain." The patient also

noticed a marked pulsation in both tumors which was accentuated by activity; for the past two years she had experienced a choking sensation with an increased pressure in the sides of her neck on lying down and had been forced to sleep with her head elevated.

Physical examination was essentially negative except for the bilateral tumors of the neck (fig. 5). The mass on the left side of the neck measured 4 by 3 cm. and was smooth and moderately firm. The overlying skin was freely movable. A definite expansile pulsation was present and a bruit was heard over the mass. Firm pressure increased the pain. The mass on the right side of the neck was the larger of the two, measuring 7 by 6 cm.; here also an expansile pulsation was present and a loud bruit was heard. This tumor was also tender on palpation. A diagnosis was made of bilateral carotid body tumors.

Urine, blood, and roentgenographic and electrocardiographic examinations were normal.

On November 15, 1938, under general anesthesia, the tumor on the left side was removed. The dissection disclosed the tumor to be firmly adherent to the external carotid artery and it was necessary to ligate this vessel to remove the tumor. The pathological report was carotid body tumor. The convalescence was uneventful except that the patient continued to have pain and a sensation of pressure over the site of the remaining tumor.

The patient was discharged and returned to the hospital six weeks later for the second operation. On December 28, 1938, under general anesthesia, the tumor on the right side was removed. The tumor was found to be exceedingly vascular and to encircle the large vessels. After a long and tedious dissection, it was partially freed from the external carotid artery, but the tumor and artery were found to be so intimately connected that it was impossible to remove the tumor without sacrificing the artery. In order to control the hemorrhage the common carotid was ligated proximally and tumor and artery were removed en masse. Almost immediately, the patient developed hemaplegia and died two days later.

The specimen was examined by Dr. E. R. Strauser and diagnosed as carotid body tumor.

This case illustrates bilateral carotid body tumors that were causing severe symptoms. The tumor on the left side was removed with great difficulty and with sacrifice of the left external carotid artery. No ill effects were experienced. The tumor on the right was removed only after the common carotid was so damaged that ligation was necessary. This case terminated in death.

SUMMARY AND CONCLUSIONS

Carotid body tumors, although rare, are being reported with increasing frequency. The anatomy, physiology, embryology, and symptomatology are briefly discussed, and the criteria as to the ligation of any of the carotid arteries are outlined.

Three cases of carotid body tumors are reported. In two cases the condition was bilateral. In one of the cases of bilateral carotid body tumors the presence of a familial tendency is suggested. The mortality rate in the three cases was 33.3 per cent.

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RÉSUMÉ

Chirurgie des tumeurs du corps carotide

Les tumeurs du corps carotide quoique rares sont rapportées assez souvent. L'anatomie, la physiologie, l'embryologie et la smyptomatologie sont discutées brièvement. Les critériums de la ligature des artères carotides sont précises.

Trois cas sont rapportés. Dans deux des cas, la condition état bilatérale. Dans un des cas de tumeurs bilatérales du corps carotide, la presence d'une tendance familiale est suggérée. La mortalité dans les trois cas fut de trente-trois et un tiers pour cent.

ZUSAMMENFASSUNG

Chirurgische Behandlung der Tumoren der Carotis Drüse

Tumoren der Carotis Drüse sind zwar selten, doch wird über ihr Vorkommen jetzt immer häufiger berichtet. Anatomie, Physiologie, Entwickelungsgeschichte und Symptomatologie werden kurz abgehandelt und die Richtlinien für Unterbindung einer der beiden Carotiden beschrieben.

Bericht über 3 Fälle von Carotisdrüsen Tumoren. In 2 Fällen war das Leiden doppelseitig. In einem von den doppelseitigen Fällen wird eine familiäre Anlage angenommen. Sterblichkeit in den 3 Fällen war 33 1/3%.

SUMARIO

Cirugía de los Tumores de la Carótida

Los tumores de la carótida, aunque raros, se han estado reportando con mas frecuencia. La anatomía, fisiología, embriología, y sintomatología son brevemente discutidas, y el criterio con respecto á la ligadura de la carótida esta subrallado.

Tres casos de tumores de la carótida son reportados. En dos casos la condición era bilateral. En uno de los casos de tumor bilateral de la carótida la tendencia familiar es indicada. La mortalidad en los tres casos fué de 33.3 por ciento.

RIASSUNTO

Chirurgia dei tumori dei corpi carotidei

I tumori dei corpi carotidei, benchè rari, sono riportati con maggiore frequenza. L'anatomia, fisiologia, embriologia, sintomatologia sono brevemente discusse, come pure lè modalità della

legatura delle carotidi. 3 casi di tumore del corpo carotideo vengono riportati. In un caso, di tumore bilaterale, la presenza di una tendenza familiare e suggerita. La mortalità nei 3 casi è stata del 33 per cento.

Dr. André Crotti, President of the International College of Surgeons, has been vacationing at his summer home at Wequetonsing, Mich.

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Prof. Dr. Rudolf Nissen, of Istanbul, Turkey, Vice-President of the International College of Surgeons, is spending his vacation in the United States as the guest of Dr. Edward D. Churchill, of Boston. He is accompanied by Mrs. Nissen and daughter.

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Dr. M. M. Cruickshank, of Madras, India, one of the regents of the International College of Surgeons, is vacationing in the United States. After a week's stay in Chicago, he proceeded to The Mayo Clinic and other points of medical interest.

Dr. Charles H. Arnold, of Lincoln, Nebraska, Secretary of the Scientific Assembly, United States Chapter, will address the Pan-Pacific Surgical Society in Honolulu, Hawaii.

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Dr. Donald C. Balfour, of the Mayo Foundation, and Prof. Peter Bull, of Oslo, were admitted as honorary fellows of the Royal College of Surgeons, England, at the quarterly meeting of the council on July 13.

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Dr. Fred H. Albee, International President Elect, has been called to Europe. He is attending some clinics in Europe and is conducting some clinics abroad. He is expecting to return by October 1.

NATIONAL ASSEMBLY

THE NATIONAL ASSEMBLY OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS WILL BE HELD ON FEB. 11 TO 14, 1940, AT VENICE, FLORIDA, UNDER THE DIRECTION OF DR. FRED H. ALBEE, INTERNATIONAL PRESIDENT-ELECT, AND THE PRESIDENCY OF DR. FREDERICK M. DOUGLASS, PRESIDENT OF THE UNITED STATES CHAPTER AND CHAIRMAN OF THE PROGRAM COMMITTEE.

THE HEPATORENAL SYNDROME

TREATMENT

EUGENE ST. JACQUES, M.D.

Professor of Historical Medicine, University of Montreal

MONTREAL, CANADA

GARLOCK and Klein,[6] of the Mt. Sinai Hospital, New York City, in January 1938 brought to the attention of the surgical world a symptom complex with which most surgeons are more or less familiar, the hepatorenal syndrome. It is an intoxication caused by absorption of proteins and is characterized by an insidious onset, usually nervous irritation, often progressing to delirium, coma and death. It was first described by Heyd,[7] who observed its occurrence following intestinal obstruction and after extensive cutaneous burns. The syndrome frequently was observed after abdominal operations, especially those involving the biliary tract, and was believed to be caused by profound chemical changes the exact nature of which could not be determined by existing clinical or laboratory methods. Garlock and Klein concluded from their investigations that those cases which resulted fatally were complicated by extrahepatic infection, for their autopsy findings did not substantiate the clinical diagnosis. Their examination of pathologic livers and kidneys disclosed various conditions, and these frequently were of long standing and of too mild a character to be considered the cause of death.

In France the syndrome was recognized and studied by many clinicians, among whom were Duval[3] and Fiessinger.[5] These observers supposed the syndrome to be due to absorption, the blood having become suddenly deluged with a great amount of dead cellular elements containing more protein substances than the liver could transform. The presence of these cellular elements in excessive amounts was believed to be due to manipulation and tissue destruction. The result was that the patient entered a state of alkalosis or azotemia. Duval termed this state *la maladie post-opératoire.*

ORIGIN

That the hepatorenal syndrome is of toxic origin is evidenced by the great increase of polypeptides in the blood. Polypeptides are toxic proteins, less complex than amino-acids, resulting from the disintegration or catabolism of dead cells. They are normally present in the blood in minute quantities (0.029 mg. per one hundred cubic centimeters). The fact that they are found in larger quantities in the portal vein than in the subhepatic vein indicates that they are broken down by the liver, which organ transforms them into urea. The urea thus formed is for the most part eliminated by the kidney, although a small part remains in the blood together with the untransformed polypeptides.

In a series of examinations of the blood of fifty-three patients on whom operation had been performed, there was an increase in polypeptides in forty-one. In eleven the blood urea was increased, indicating a normally functioning liver. In but one case (duodenal ulcer) of the fifty-three was the content of protein bodies in the blood within normal limits.

Another important and constant finding in these cases is that of hypochloremia. A state of hypochloremia is found in many conditions, but especially in those which, through devitalization of tissue, cause an abnormal amount of

protein bodies to be thrown suddenly into the circulation, as in burns (radium and x-ray burns included) and cancer. Investigations have shown that excision of cancerous tissue is usually followed by a decrease in amount of the toxic proteins in the blood and an increase in the chlorides toward normal.

The toxic effects of an excessive amount of polypeptides in the blood is not open to doubt. Abderhalden[1] and Miyagawa,[6] as well as others, have confirmed it. Postoperatively these effects appear very gradually; they may commence within forty-eight hours or be delayed as long as five or six days. The earliest noticeable symptoms are somnolence and mild nervous irritation. Depending on the resistance of the patient, that is, the functioning of his liver and kidneys, and the severity of intoxication, or amount of absorption, these symptoms disappear or continue. If they persist they may become aggravated, gradually or suddenly, so that delirum or coma supervenes and a fatal outcome often results.

TREATMENT

Since it has been proved that the hepatorenal syndrome is one of absorption and intoxication, the liver and kidneys being largely responsible for elimination, it is of vital importance that these organs function as nearly normally as possible. Even when these organs are normal, it is wise to take certain precautionary measures to restore any depletion of the alkaline reserve (Duval, Roux and Goiffon).[4] The preoperative administration of hypertonic solution of sodium chloride in sufficient quantities will do much to prevent the hepatorenal syndrome and to safeguard the life of the patient. Furthermore, being an active intestinal stimulant, it will hasten bowel evacuation. Its use, when indicated, should not be neglected.

The method of administering hypertonic solution of sodium chloride and the amount to be given are largely a matter of choice. Duval gives from 20 to 50 cc. of a 10 per cent solution intravenously each twenty-four hours. In the University of Montreal Hospital a simple procedure that we have named the "2-2-2" is used. Immediately after operation a mixture consisting of 2 tablespoonfuls of sodium bicarbonate, 2 tablespoonfuls of brandy, from 1 to 2 teaspoonfuls of sodium chloride and 2 cupfuls of strong black coffee is given by the Murphy drip. After this has been absorbed, from 500 to 800 cc. of pure warm water is given. The same procedure is performed on the succeeding day, and if, despite these measures, any symptoms suspicious of a beginning hepatorenal syndrome appear, from 20 to 30 cc. of sodium chloride hypertonic solution is administered intravenously.

SUMMARY

The hepatorenal syndrome is a potentially dangerous symptom complex which may occur after major abdominal operations and certain other conditions (burns, cancer, etc.), in which the general circulation contains an excessive amount of toxic substances, polypeptides. It is due to inability on the part of the liver to transform these toxic substances into urea or to the inability of the kidney to eliminate the urea in sufficient quantities. Hypochloremia ensues. Prevention is by careful preoperative functional tests and by supplying the patient with sufficient chlorides after operation.

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RÉSUMÉ

Le Syndrome Hépaticorénal

Ce syndrome peut survenir après les grandes opéracions abdominales et après certaines autres conditions (brûlures, cancer, etc.). Il est determiné par la présence d'une quantité excéssive de substances toxiques dans le sang—des polypeptides. Dans cet état où le foie est incapable de transformer ces substances toxiques en urée ou le rein est incapable d'éliminer l'urée en quantité suffisante une hypochlorémie resulte. On evite ce syndrome in examinant très minutieusement les malades avant l'operation et en administrant des chlorures en quantité suffisante après l'opération.

ZUSAMMENFASSUNG

Der Heptaicorenale Symptomenkomplex

Der hepaticorenale Symptomenkomplex ist ein äusserst gefährlicher Zustand, er kann auftreten nach grossen Bauchoperationen und gewissen anderen Zuständen (Verbrennungen, Krebs, u.s.w.), bei denen eine erhebliche Menge toxischer Substanzen im Blute kreist (Polypeptide). Er rührt von der unfähigkeit eines Teiles der Leber her, diese toxischen Substanzen in Harnshoff umzuwandeln, oder auch von der Unfähigkeit der Niere genügende Mengen von Harnstoff auszusheiden. Es entsteht Hypochloramie. Verhütung durch sorgfältige vor operative Funktionsprüfungen und durch Zufuhr von genügend Chloriden nach der Operation.

SUMARIO

El Síndrome Hepatorenal

El síndrome hepatorenal es un síntoma complejo potencialmente peligroso el cual puede presentarse despues de operaciones abdominales y en algunos otros casos (quemaduras, cancer, etc.), en el cual la circulación general contiene una excesiva cantidad de substancias, tóxicas, polipéptidas. Esto es debido á la inabilidad del higado á transformar éstas substancias tóxicas en urea ó la inabilidad de los riñones de eliminar la urea en cantidates suficientemente grandes. Hipocloremia la sigue. La prevención se obtiene por medio de cuidadosos exámenes y pruebas funcionales antes de la operación y dandole al enfermo suficientes cloridos despues de la operación.

RIASSUNTO

La sindrome epatico renale

La sindrome epatico renale che pericolosamente sopravviene a operazioni addominali maggiori, come in altre condizioni patologiche (cancro, bruciature, etc.) è dovuta a un eccessivo aumento nella circolazione sanguigna, di sostanze tossiche, polipeptidi; o per una minorata funzione epatica nel trasformare queste sostanze tossiche in urea o perchè il rene non può eliminare urea in quantità sufficiente. Ipocloremia sopravviene. Ricerche funzionali preoperatorie, e somministrazione di cloruri, dopo l'atto operatorio, può prevenire questa sindrome.

PRIMARY OSTEOCHONDROBLASTOMA OF THE METACARPUS

DR. MANUEL A. MANZANILLA, F.I.C.S.

Academia Mexicana de Cirugia, Academia Nacional de Ciencias

MEXICO, D. F.

THE theory that the mesenchymatous tissue is exclusively of mesodermic origin has been abandoned at the present time and it is believed that a part of this tissue comes from the epithelial layers.

In fact, it is stated that the mesenchyme includes the common connective and vascular tissues which are always associated together, giving rise, by virtue of functional transformations, to the tissues of support (bone, cartilage), the muscles (striated and smooth), the adipose and endothelial tissues; the connective-vascular tissue, by means of the process in question, remains intimately connected to the entire group of aforementioned tissues or secondary formations.

The cartilage and the bone are originally mesenchymatous tissues, the peculiar histologic characteristics of which are distinguished respectively by chondrin, secretion of chondroblasts, and ossein, secretion of the osteoblasts; the connective-vascular tissue is always associated with the morphogenetic action of the perichondrium and the periosteum, or serves as a guaranty of the histologic nutrition.

NOMENCLATURE OF NEOPLASMS

Neoplasms of the following tissues are described:

1. Common connective-vascular
2. Adipose
3. Skeletal
4. Muscular
5. Endothelial.

Classically benign neoplasms of the mesenchymatous tissues are designated by the corresponding radical, followed by the ending *oma* (fibroma, osteoma, chondroma, etc.), the denomination of sarcoma being reserved for malignant tumors, usually in opposition to epithelioma.

As the result of the efforts of the American Registry of Bone Sarcoma to establish a needed classification for the study of malignant tumors of bones, the Clinical Pathological Association entrusted the study of the matter to MacCarty, Sonders, St. George and Bell, acting in collaboration with the original committee, for the purpose of preparing as accurate a classification of osseous tumors as possible. If this classification were applied to the case which is the theme of the present study, the denomination would be osteogenic tumor of the malignant type, osteogenic sarcoma, which would correspond to osteosarcoma ossificans, in accordance with Leriche and Policard, cited by Miginiac; nevertheless, despite an acceptable classification, the classical terminology, which has been discussed so frequently from the standpoint of clarity, will persist essentially.

I have adopted the terminology praised by Zuckerman, which seems to me to be simple and clear; Benítez Soto has recently given his attention to this terminology, insisting on the advantages which are obtained from simplifying the elaborate nomenclature of neoplasms. The denomination employs numerous compounds for the radical of

the tissue in question, followed by the ending *oma* when it refers to clinically benign neoplasms, or the ending *blastoma* when it refers to clinically malignant neoplasms.

In accordance with Leriche and Policard, within the elected terminology malignant neoplasms of the bones can be classified thus:

1. Osteogenous osteoblastomas
2. Myeloblastomas
3. Endothelioblastomas.

Osteogenous osteoblastomas originate from osteoclasts, produce bone or are capable of producing it, destroying at the same time the normal bone; the type is fusocellular; in these neoplasms are found bone, cartilage, mucosal tissue, and occasionally myeloplaques, whose presence does not possess any significance as to the benign or malignant quality of the neoplasm; malignancy is affirmed by the existence of numerous mitoses, cellular anomalies, nuclear alterations, vessels without true walls, and histologic polymorphism.

Myeloblastomas arise from the hematopoietic cells and are neoplasms of the globocellular type which become generalized by the lymphatic route (Broca).

Endothelioblastomas are not of interest here; they are of endothelial origin, are not osteogenous, and are not derived from osseous tissue.

PATHOLOGIC CONSIDERATIONS

Osteoblastomas represent malignant neoplasms of the bones. Tumors which are called myeloplaques (Nélaton), myeloplaxic tumors (Ombredanne), osteomyeloplaxomas, are usually benign, but their neoplastic or inflammatory nature is uncertain; the presence of myeloplaques has no particular importance, since there are cases of fibroblastomas with myeloplaques which are very malignant and of osteitis with myeloplaques which are benign; there are found myeloplaques in inflammatory products, around foreign bodies and in malignant osseous neoplasms; the abundant or the limited presence of myeloplaques has no specific pathologic significance.

Differentiation of osteoblastomas began with the works of Boyer and Dupuytren. Since the work of Nélaton on distinguishing benign tumors with myeloplaques from myeloplaxomas, numerous works have appeared on malignant neoplasms of the bones. Leriche and Policard have suggested recently that osteoblastomas are not specific osseous tumors, neoplasms derived from osteoblasts, but fibroblastomas derived from osseous connective tissue, which acquire definite characteristics peculiar to the histologic medium by which they are surrounded.

At any rate, neoplasms designated as osteoblastomas, primary osseous malignant neoplasms, are markedly malignant and tend to the production of metastasis, generalization, and recurrence; the histologic interpretation of them from an anatomopathologic standpoint presents great difficulty due to the diversity of the tissues which are found in them.

Osteomas are rare, but osteoblastomas are much rarer; the excellent statistics of the Mayo Clinic show one case for every 4,000 patients who enter there; over a period of 26 years (1909-1934) only 216 cases were diagnosed in this clinic, there being included 187 cases in which the tissue obtained was utilized for re-examination for clarifying or confirming the anatomopathologic diagnosis, and 29 in which the diagnosis was founded on clinical and roentgenologic data.

Very little is known as to the *etiologic pathogenesis* of osteoblastomas; the role of traumatism, contusion and pathologic or traumatic fracture (Segond, Delbet, Brault, Dehelly, Meyerding, etc.) has been discussed, and the importance of trauma occasionally has been admitted; an attempt has been made to demon-

strate experimentally the possibility of grafting, inoculation and contagion (Carrel, Gye, Barnard, Fujanami, etc.), without arriving at unquestionable results.

Observation has pointed out courses of action in the clinic, but there is almost complete ignorance as to the how and why of the pathologic characteristics, important elements for clinical diagnosis; microscopic examination of the neoplasm extirpated at times shows ostensible unsuspected divergencies.

AGE GROUPS AFFECTED

Osteoblastoma presents itself in young subjects between 10 and 30 years of age and in adults not older than 45 years; it is observed more frequently, according to Miginiac, in the female than in the male; Mayerding, according to statistics of the Mayo Clinic, considers it to be more frequent in men than in women in the proportion of two to one. Therefore osteoblastoma is the cancer of youth, in contrast to epithelioblastoma which is the cancer of the critical age and senescence.

LOCATION

Osteoblastoma can attack all the bones, but observation has shown that there are certain sites of election, specifically those attacked by the osteomyelitis of adolescents, that is, the large long bones, especially the epiphyseal zone.

The bones usually invaded are, in the order of their frequency: femur and tibia, humerus, maxillas, the small flat bones very rarely; thus it seems that the frequency of osteoblastoma is in proportion to the size of the bones.

Bérard and Polloson, cited by Miginiac, give the following percentage of localizations:

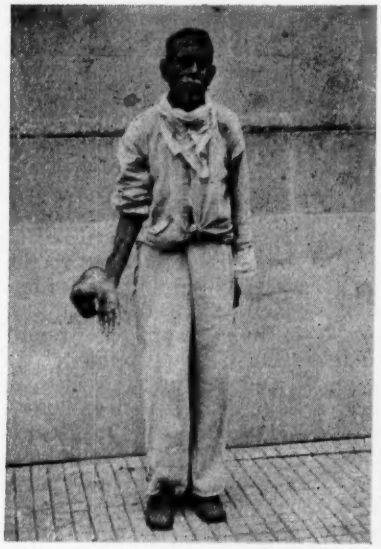
Large long bones	63 per cent
Flat bones	17 per cent
Maxillas	15 per cent
Foot and Hand	5 per cent

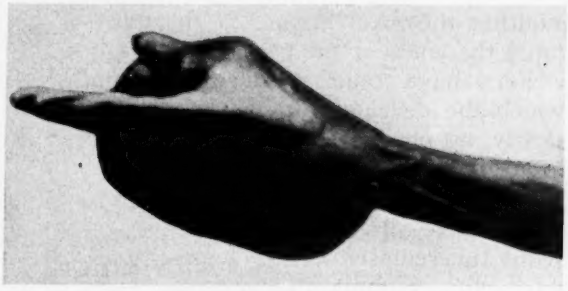
In the long bones the diaphysis is attacked in 15 per cent of the cases; in the 85 per cent remaining cases the epiphysis is attacked, frequently the one called the fertile epiphysis; the neoplasm begins in the bulb, the metaphysis or the neighboring epiphyseal zone, secondarily invading the epiphysis; the point of departure of the neoplasm is in relation to the existence of the epiphyseal cartilage, because in adults growth has terminated and the epiphysis and the diaphysis have become united.

ORIGIN AND DEVELOPMENT

Classically, osteoblastomas can originate deeply or superficially; in the first case (deep osteoblastoma, central osteoblastoma) the neoplasm invades the bone eccentrically, perforates the cortex and causes it to crack, sending out papillae below and outside the periosteum, generating by periosteal reaction lamina, osseous spines and exostoses which reveal roentgenographically the malignancy of these neoplasms; in the second case (superficial osteoblastoma, periosteal osteoblastoma) the neoplasm arises in the periosteum, surrounds the bone in a ring-like manner and invades it slowly in a manner opposite to that in which the process is effected in the first case, but producing similar lesions.

Osteoblastomas are, as a rule, very voluminous neoplasms macroscopically, reaching at times a truly extraordinary size in comparison with epithelioblastomas; they become generalized in an ominous manner, giving to the extremely grave prognosis a suggestion of something irremediable, terrible and dreadful; generalization takes place by the venous route, the lymphatic route being exceptional; this accounts for the frequency of pulmonary metastases which, in turn, send cancerous emboli through the left side of the heart to the main circulation, creating new metastases, frequently multiple, which can appear in any viscera or bone whatever, and produce new blastomas primary in type.





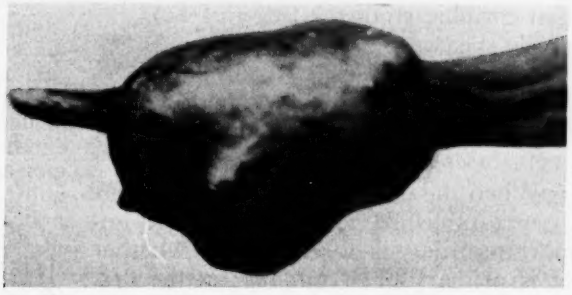


Fig. 1. Upper left, patient, 75 years old, with tumor of right hand.
Figs. 2-5. Lower left, posterior view of tumor. Above, anterior, lateral and median views, respectively, of tumor.

CLINICAL CONSIDERATIONS

Osteoblastomas are interpreted clinically by pain, osseous tumor and spontaneous, or occasionally traumatic, fracture; pain is a very variable symptom; the tumor is hard, and distended, at times is of unequal consistency, shows rapid growth and presents a very well developed venous net-work; as time passes the general condition declines, cachexia appearing; the tumor may reach a monstrous volume; clinically there can be found, with more or less clarity, parchment-like crepitation, pulsation, impulsion and even aneurismatic expansion of the tumor; there may be

observed hemorrhagic pleural effusion, the phenomenon of pulmonary or tracheo-bronchial metastases, daily fever and local elevation of temperature; it has previously been said that it usually affects young subjects, producing metastases by the venous route, assuming that the tissue of these neoplasms does not possess lymphatics.

Osteoblastoma is fatal, the life of the patient terminating because of cachexia and cancerous generalization in a short time, less than two years or only a few months; the fatal ending is the more rapid the younger the patient, although writers have reported rare cases in which the development has been more slowly, no plausible explanation having been given for this phenomenon.

The differential diagnosis should include, especially at the beginning, osseous tuberculosis of the epiphysis, osteomyelitis, syphilis, and osteomas. One should take into account the rarity of osteoblastomas and one should not forget the use which can be made of roentgenographic studies. In all cases, generally speaking, the slow development of the tumor can dismiss malignancy, and with added reason if the general condition has not undergone change and if metastases are not present.

When the diagnosis of the tumor has been established as malignant, the important thing is to determine whether it is primary or secondary; in the first case the diagnosis of osteoblastoma will be determined; in the second it might be a case of osseous metastases of epithelioblastoma—breast, prostate, kidney, suprarenal glands—and with greater reason if it concerns a subject of more than 50 years of age.

CASE REPORT

A. V., 75 years of age, married, a day laborer (fig. 1) entered the General Hospital August 2, 1933.

Questioning revealed familial longevity, the parents and brothers having died at an advanced age; the personal history was unimportant.

Seven years ago a small tumor appeared on the dorsal surface of the right hand, between the index finger and the thumb, without any local reaction; the tumor had grown slowly for three years and had reached approximately the size of an orange; intermittently it was painful; the pain, pricking in quality at the beginning and localized at the site of the tumor, later extended to the entire member, posteriorly, in a manner impossible to describe; during the next four years growth continued until the tumor reached its persent size, approximately a little larger than a grapefruit; it was oval, hard, somewhat adherent to the deep layers, very vascular and covered with lustrous and ruddy skin (figs. 2-5). The pain was pricking and intermittent and prevented sleep at times.

Inquiry by systems disclosed only blindness and deafness of little importance.

Physical examination revealed a male of the above-mentioned age; no abnormalities were found in the neck, thorax, abdomen, genito-urinary organs or lower extremities; pallor of the palpebral and buccal mucosa, thinness of the upper extremities, and axillary microadenitis were observed.

Roentgenologic Examination: Fluoroscopic examination of the thorax was without significance. A roentgenogram (fig. 6) of the tumor showed an image corresponding to an enormous osteoblastoma, with the point of departure at the level of the lateral (or external) border of the hand (carpus-metacarpus); the tumor had destroyed and infiltrated the first metacarpal bone and the first phalanx; there was noted production of osseous tissue of new formation (blastoma), which was disposed in radial form or distributed within the tumoral mass, without definite limits being observed and with a definite tendency to growth and to increase of the neoplastic mass. The roentgenologic diagnosis established a marked contrast to what could be derived from the purely clinical examination; it was a case of osteoblastoma, of malignant neoplasm.

Treatment. The lamentable results obtained from surgery, roentgenotherapy and radium therapy in the treatment of osteoblastomas were considered, these being so consistently poor that when a patient upon whom amputation or disarticulation has been performed survives, one is led to think of a possible error in diagnosis; notwithstanding the gravity of the diagnosis and the sad experi-

Fig. 6. Roentgenogram of tumor.

ence of the majority of cases of this type of cancer, surgery was decided upon, on the grounds that it would be the most suitable of all methods of treatment.

Let it be recalled that amputation is preferred by some and disarticulation is preferred by others; I have followed the criterion of the Lyon school: conserving operations, atypical resections, regular resections; it is thought that extensive mutilating operations are useless when metastases are present, or excessive in the contrary case; the best surgical conduct is, naturally, to exceed amply the limits of the tumor, if this is possible, and not to sacrifice the extremity, in conformity with the advice of Nové-Josserand and Tavernier.

Roentgenotherapy and radium therapy should be reserved for cases in which it is not possible to employ surgery; the results with them are not satisfactory.

Conservative surgical intervention was thus decided upon, taking into account the apparent benign quality which the clinical development indicated.

Pre-operative examinations were made (urea, coagulation time, hepatic function, urine, Wassermann, Van Slyke), which were made by Drs. Gustavo Argil, Roberto Alfaro Trejo and Esther Chapa; the results were all normal.

Operation was performed August 17, 1933, with the assistance of Dr. Teodoro Flores Covarrubias; protoxide of nitrous oxide anesthesia was administered by Dr. Salvador Santoyo Aguilar; amputation of the thumb was performed with total removal of the metacarpal bone; a delicate monopolar electric bistoury, constructed by Dr. Flores Covarrubias, was employed for the section; atypical technic had to be used because the anatomic landmarks were miss-

ing; the tumor was so large that the raw surface could not be covered sufficiently; thus about two-thirds of it had to be left uncovered.

The postoperative development consisted in gemmation and convergent epidermization until total cicatrization had occurred, without any defect in the formation; the first two treatments were given with ambrine at an interval of 72 hours, the three following treatments with dermotrophyl at intervals of five days, and the remainder, until the patient was dismissed, with genuine dermotrophyl at intervals of a week. The patient left the hospital October 4, 1933, 48 days after surgical intervention, apparently in good health.

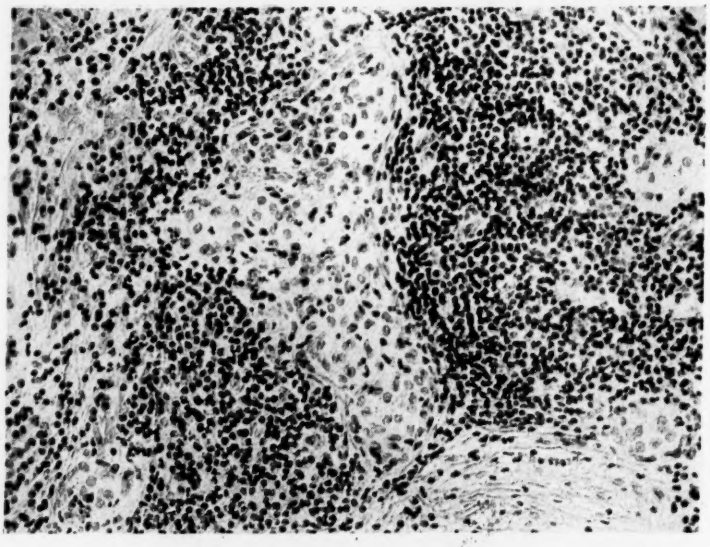


Fig. 7. Microphotograph of tumor, general view; no irregularities or nuclear monstrosities of importance are perceptible.

PATHOLOGIC REPORT

Dr. Ignacio Gonzalez Guzman made an anatomopathologic study of the neoplasm which was removed, his report being as follows: tumor of the hand, 1.127 Kg. in weight, 18.5 cm. in the long axis of the member, 13 cm. in width, 11 cm. in height. The specimen was fixed in 10 per cent solution of formalin, cut for freezing and stained with silver carbonate. Fragments of the piece presented a somewhat diverse macroscopic appearance. Study of the pieces showed that it was a neoplasm derived from mesenchymatous tissue. It was considerably polymorphous and presented a quite varied appearance; in some portions the texture was purely chondromatous, with encapsulated cells and characteristic intercellular substance; other portions of these formations were infiltrated with calcareous salts and the osseous formation was outlined at the expense of the cartilage; finally, in others there were groups of unequal cells, some monstrous without any structural arrangement and with fibrillar texture, intercellular, of medium richness; in some cut sections myeloplaques were observed. Interpretation: Osteochondroblastoma. There existed a low grade malignancy because of the polymorphism with cartilaginous formation and above all, osteogenic function, medium nucleolar richness of the tumoral elements, slight destructive tendency; Dr. Guzman attributed this to the presence of myeloplaques.

Dr. Guzman was good enough to reexamine the microscopic preparations for the microphotographic illustrations

of the present work; after conquering technical difficulties, which required the use of photographic filters because of the inevitable action of time (six years have elapsed since the original coloration), we have been able to obtain only three microphotographs which illustrate the various aspects (figs. 7-9); figure 7 is a general view of the tumor and shows great masses of small cells with lympho-

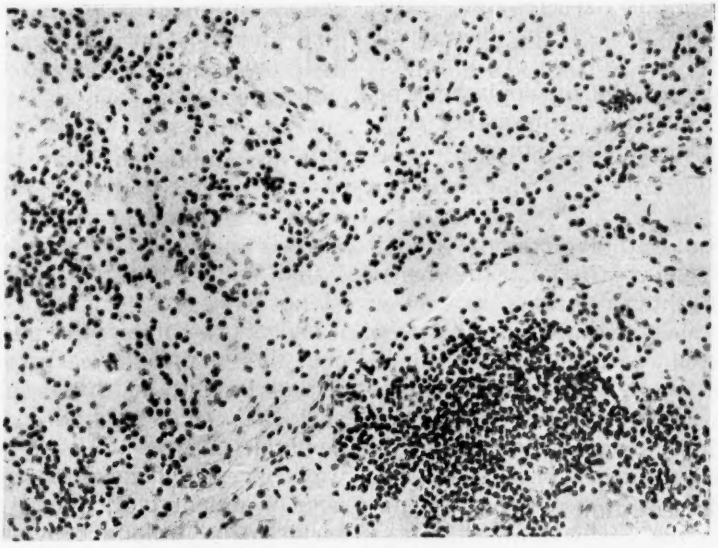


Fig. 8. Microphotograph; special view of masses and groups of cells.

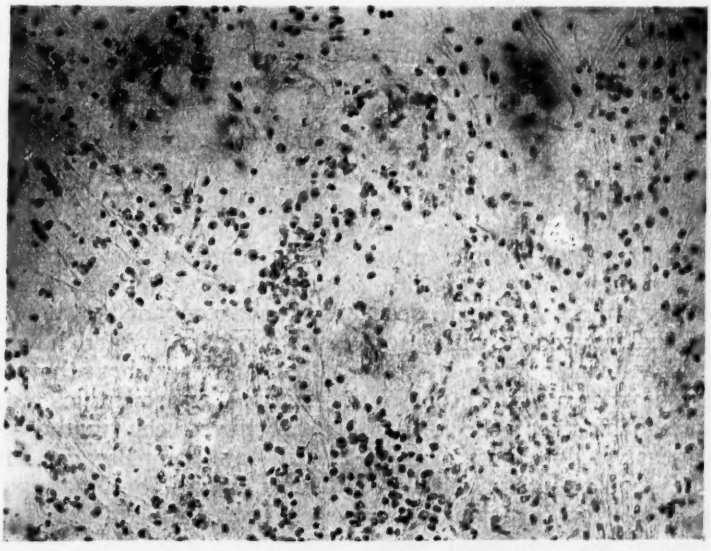


Fig. 9. Microphotograph, showing portion of tumor in which myeloplaxic cells are present.

cytoid nuclei and groups with larger nuclei, among which no great irregularities or nuclear monstrosities are perceptible; figure 8 is a special view of the masses and groups of the mentioned cells; figure 9 is a portion of the tumor in which cells of the myeloplaxic type are present, mingled with smaller cells and lymphoplasmocytic elements.

COMMENT

The anatomopathologic study is conclusive and confirms in detail the roentgenographic interpretation; it was a case of osteoblastoma, metacarpal osteochondroblastoma; the exact denomination is primary metacarpal osteochondroblastoma, a rare cancer, the development of which in this particuclar case was that of a benign neoplasm.

At the present time six years have passed since the surgical intervention; during the first four years I saw the patient several times and he was apparently enjoying good health at his work in the country, in Xochinaca, State of Mexico; but since then I have not heard of him, despite my inquiries; I do not know whether he is living or dead, and, if the latter is true, whether his death was caused by a recurrence or by his advanced age; but at any rate, the case is extremely interesting. Irradiation was not used because it is known that osteochondromas do not respond to this treatment; neither were the toxins of Coley used because, for some time, the general opinion of this method, derived from old ideas on the therapeutic action of streptococcic toxins, has been that it does not seem to have given the good results which have been attributed to it on occasions.

Results which are obtained with mutilating operations, amputation or disarticulation, are judged wrongly. It is mentioned that from 80 to 90 per cent of the operations are followed by recurrence before two years, despite the very personal opinion of Lecène and Huet that in their practice these results are not brilliant, but they believe them superior to those obtained with conservative operations; Lecène and Huet do not give statistics on this matter so that their statement is reduced to an opinion or a very personal appreciation. Moreover, we must take into account that, notwithstanding the statistics and the cases reported in the literature, oftentimes an uncertain or incorrect diagnosis is encountered in clinical practice; I shall not attempt to say that statistics do not have great orientating value, but it is necessary to be cautious and to proceed thoughtfully in each case.

Broca maintains that despite the poor surgical results in children and the lamentable ones in adults, one should always operate whenever possible because, poor or lamentable as the results are, life seems to be prolonged by surgery, and this is a great accomplishment; roentgenotherapy and radium therapy should be reserved for the inoperable cases.

No matter what is said, surgery of cancer is surgery which is based on complete exeresis, amputation or disarticulation in the case of osteoblastomas; at the present time it is the best therapeutic method, provided that it is used with intelligence and judgment; complete exeresis in the present case would not have meant amputation of the forearm or the arm, or disarticulation at the wrist, the elbow or the shoulder, because such procedure would have constituted a barbarous rather than a complete exeresis, for scientific purposes, and would have been inadvisable from a social standpoint because it would have made an invalid of a man who, in his old age, desired and found it necessary to work.

Complete exeresis was carried out, based on a happy medium which was derived from an appropriate fitting doctrinal interpretation; complete, but without a resulting damage more important than the good which could be

obtained from it; complete exeresis, but without great mutilation; I sincerely believe that the Lyonese school would consider this case an example of complete exeresis.

I believe the type of operation performed is sufficient, as far as is naturally possible, to eliminate up to a certain point the postoperative danger which certain cancers cause; after the operation, the cancerous cells which are in lethargy can awaken and grow with relative rapidity due to the decrease of pressure in the regions immediately adjacent to the loss of substance produced by the surgical exeresis and due to the stimulation of the neoformation which accompanies the phlegmasia in the processes of pathologic regeneration.

CONCLUSIONS

From this study, I can conclude that the scientific significance of this particular experience is as follows:

1. Roentgenographic study is of great usefulness for establishing the diagnosis.
2. The anatomopathologic study is of prime importance for establishing the malignancy of the tumor.
3. There are reasons for eventual divergencies in the clinical characters with respect to the benign or malignant quality of the tumor.
4. Caution should be used in the interpretation of the morphologic phenomena, classical indications of the malignancy of the tumor.
5. Surgery of cancer is surgery which is based on complete exeresis.
6. Experience and personal judgment should establish, according to the case, the doctrinal interpretation suitable for complete exeresis.

SUMMARY

A case of primary osteochondroblastoma of the metacarpus occurring in an old man, aged 75, is presented; pathologic and clinical considerations are made as to the characteristics and the development of this type of malignant neoplasm, rare as to frequency in general and as to localization in this case in particular; the clinical history and the treatment used, which is discussed, are set forth. Comments are made, conclusions as to the following being derived from them: the usefulness of roentgenographic study for establishing the diagnosis; the importance of anatomopathologic study for determining the benign or malignant quality of the tumor; variations present in the clinical characters with respect to the benign or malignant quality of the tumor; the need for caution in the interpretation of the morphologic phenomena, classical indications of the malignancy of the tumor; surgery of the cancer being based on complete exeresis, experience and personal judgment must establish the doctrinal interpretation.

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RÉSUMÉ

Ostéochondroblastome primitif du métacarpe

Le malade, âgé de soixante-quinze ans, est montré. Des considerations pathologiques et cliniques sur les caracteristiques de ce type rare de néoplasme malin, rare généralement et rare dans ce cas particulier, de localisation sont avancées. On a discute et l'évolution clinique et le traitement. Pour établir le diagnostic, l'étude roentgenographique est utile. L'étude anatomopathologique ainsie que l'observation clinique nous renseignent sur la nature bénigne ou maligne du néoplasme. Il faut être prudent dans l'interpretation des phenomènes morphologiques. La chirurgie du cancer demande l'exérèse. L'expérience et le jugement individual doivent préciser l'interprétation doctrinale.

ZUSAMMENFASSUNG

Primäres Osteochondroblastom der Mittelhand

Ein Fall von primärem Osteochondroblastom der Mittelhand bei einem 75 Jahre alten Mann wird vorgestellt. Pathologische und klinische Erwägungen werden gemacht über die Entwickelung und die Eigenheiten dieser Art von bösartigen Tumoren, welche im allgemeinen, wie auch was die Lokalisation dieses Sonderfalles betrifft, aüsserst selten sind. Die Krankengeschichte und die Behandlung in diesem Falle, über welche diskutiert wird, werden erörtert. Folgende Schlüsse, die kommentiert werden leiten sich daraus her: Die Nützlichkeit der Röntgen-Untersuchung zur Diagnosenstellung. Die Wichtigkeit anatomisch pathologischer Studien zur Feststellung der Gutartigkeit oder Bösartigkeit des Tumors; die Verschiedenheit des klinischen Bildes, abhängig von der Gut- oder Bösartigkeit des Tumors; Vorsicht in der Auslegung morphologischer Bilder Klassischer Merkmale für die Bösartigkeit eines Tumors in der Chirurgie des Krebses die die vollständige Ausrottung zum Ziel hat, muss Erfahrung und persönliches Urteil die schulmässige Auslegung erhalten.

SUMARIO

Se da a conocer un caso de osteocondroblastoma metacarpal primitivo, en un viejo de 75 años de edad; se hacen consideraciones patológicas y clínicas sobre las características y evolución de este tipo de neoplasma maligno, raro por su frecuencia en lo general y por la localización del caso en particular; se relata la historia clínica y la conducta terapéutica seguida, a cual se discute; se hacen comentarios, derivando conclusiones, a saber: utilidad del estudio roentgenográfico para establecer el diagnóstico; importancia del estudio anatomopatológico para establecer la benignidad o la malignidad del tumor; divergencias existentes en los caracteres clínicos con respecto a la benignidad o la malignidad del tumor; cautela en la interpretación de los fenómenos morfológicos, indicios clásicos de la malignidad del tumor; basándose la cirugía del cáncer en la exéresis amplia, la experiencia y el criterio personal deben establecer la interpretación doctrinal.

RIASSUNTO

Osteocondroma primitivo del metacarpo

Un caso d'osteocondroma primitivo del metacarpo in un uomo di 75 anni viene riportato. Considerazioni patologiche e cliniche sulle caratteristiche di questo tumore maligno generalmente raro, e specialmente raro in questo caso di localizzazione, sono discusse.

L'importanza dell'indagine roentgenographia nella identità diagnostica del tumore, come pure dello studio anatomopatologico e clinico per la determinazione della benignità o malignità del tumore stesso è rilevata. Prudenza è necessaria nella interpretazione dei fenomeni morfologici. Il procedimento chirurgico è basato sulla completa exeresis. L'esperienza e criterio individuale devono precisare l'interpretazione dottrinale.

The John Lucas Walker Studentship of the University of London for original research in pathology, of the value of £300 a year for three years, has been awarded to **J. C. Colbeck**.

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Dr. F. Wood Jones, professor of anatomy at the University of Manchester, will retire at the end of the Michaelmas term.

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La Academia Nacional de Ciencias Antonio Alzate has elected **Dr. Max Thorek,** present acting executive secretary of the International College of Surgeons, Foreign Academy Member.

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Petrification of Anatomic Specimens

A method of petrifying anatomic specimens was presented by **Prof. Francesco Spirito,** head of the obstetric and gynecologic clinic of Siena University, in a lecture delivered recently before the Accademia dei fisiocritici of Siena.

Professor Spirito presented specimens of structures of the human body which were petrified by his method, by means of which it is possible first to petrify organs for studies on the external aspect of a given lesion and then to depetrify them for microscopic study. The procedure does not cause histologic alteration of the organs. He showed a piece of marble united with petrified specimens of viscera. This recalled the work done by Segato, who made a table with a mosaic which contains 214 anatomic specimens of human viscera and resembles multicolored marble; the table is preserved in a museum.

The speaker delivered the formula for his method of petrification to the Accademia dei Lincei; he is attempting to improve the method before he publishes it. Segato, Gorini and Marini, who previously obtained good results with this work, never disclosed their methods.

Dr. André Crotti read a paper on "How Can a Committee Run a Cancer Clinic with Small Financial Support" at the International Cancer Congress held recently in Atlantic City.

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Bassini's Operation

The anatomic-physiologic principles of Bassini's operation were reviewed by Professor Catterina of Rome University in a lecture delivered recently before physicians of the garrison at Rome. Catterina, who was a pupil of Bassini, said that the operation is of social importance, the frequency of hernia being more than 15 per cent in workers in some industries.

Bassini performed the operation for the first time in 1884. He presented the first scientific report in 1886 and published his monograph in 1889. The monograph had some defects both in the text and in the illustrations; thus the technic was erroneously interpreted and modifications were ordered. Catterina later published a complete textbook on the operation with sixteen illustrations which were done by the painter Gaigher. This book was published in five different languages.

Bassini believed that the fascia transversalis is not the posterior aponeurosis of the transverse muscle. It is a membrane of varying thickness in different persons which originates at the small pelvis and goes over and behind the transverse muscle to the costal arches. Bassini's operation is based on the principle of providing the inguinal canal with a posterior wall which is made up of the fascia transversalis and the transverse and small oblique muscles. The muscles stretch in a special manner after the operation, because of the different course of their fibers, and prevent contact between the abdominal viscera and the inguinal cord and the compression of the former on the latter.

DIDACTIC USE OF THE CADAVER IN PROPEDEUTIC SURGERY

MIGUEL LOPEZ ESNAURRIZAR, M.D., F.I.C.S.

Academia Mexicana de Cirurgia

MEXICO, D. F.

IT is necessary to know in the most perfect manner possible some phenomena which are produced at exploration in numerous surgical conditions (knowledge which is obtained only after repeated observation of many patients). The necessity is evident, since one can describe more easily what is already known, it being possible to compare the phenomenon with other analogous conditions previously observed. The person who is best qualified to observe such phenomena is the one who has had a very wide practical experience and has, for this reason, many points or examples for comparison. Unfortunately, various phenomena do not present themselves with the frequency we may desire, or they cannot be observed without injury to the patient. This need, felt generally, but especially by those who are beginning their practice, we have managed to satisfy in part with the aid of the cadaver.

USEFULNESS OF CADAVER

Let us take as an example the phenomenon of osseous crepitation: It is characterized by a particular sensation of rough friction, distinct from that produced by cartilage, blood, gas, etc.; it is distinguished from these only by its harshness, although it may be of very slight intensity; the best knowledge of this crepitation is obtained by observing it at various times. But in order to distinguish it in patients, it is necessary to make the exploration personally immediately after the fracture, before splints or other immobilizing apparatus have been applied. For this reason, it is difficult to feel the crepitation and it is much more difficult when, in the lecture room, one desires to have several or all of the students note the osseous crepitation, if one takes into account the fact that this cannot be done without the danger which repeated manipulation of the fractured osseous extremity incurs (increase of splinters, transformation of incomplete fractures into complete ones, etc.) besides the pain which the patient would have to suffer.

On the cadaver, after it has been prepared by fracturing some of the bones, precisely the same phenomenon can be observed, this being perceptible without inconvenience for as many as desire to observe it and for as many times as they desire.

Moreover, some phenomena can be interpreted better when one produces experimentally, on the cadaver or in the animal, phenomena similar to certain signs of disease (for example, vascular rubs and murmurs studied by Teófilo Ortíz).

LIMITATIONS OF CADAVER

It is obvious that only certain phenomena can be provoked in the cadaver in a manner almost identical with the phenomena which are observed in patients; others are only similar, and some cannot be reproduced or imitated at all, but at least for the first group the usefulness of the cadaver is manifest.

The best and most effective method of teaching is that which is obtained from

* Read at the Scientific Assembly of the International College of Surgeons, New York, May 22, 1939.

patients, but due to the limitations previously outlined, it is necessary to look for substitutes capable of aiding students in their first steps taken in the field of the clinic.

The cadaver anatomically is fitted for teaching numerous explorations which can be called "objective," and the living animal, for teaching explorations which are principally functional.

To make some explorations it will not be necessary to prepare the cadaver previously, as for posterior rhinoscopy, laryngoscopy, gastroscopy, spinal puncture, etc.; and for others, with moderate adaptation, cadavers can be prepared for exploration of fractures, luxations, synovial affections (injected to simulate effusions), etc.

It is evident that it is a question of obtaining results anatomically similar to those obtained in patients; for example, in the case of luxation produced in the cadaver there will be obtained conditions of deformity, abnormal mobility or limitation of movement, etc., very similar to those which are observed in a case of luxation in a living subject; but it will be very difficult to imitate hematoma and impossible to imitate edema, sensitiveness, etc.

PROCEDURES

Despite these limitations, there are numerous examples of its great usefulness, as I have been able to observe in the lecture room, and as can be deduced from the following list of procedures carried out on the cadaver.

Head: Injection of coagulated blood below the scalp or epicranium to obtain sanguineous crepitation; injection of air to demonstrate gaseous crepitation.

Percussion of the Cranium: Normal zones obtained by percussion; changes observable after injection of blood into the extradural space or air into the ventricles; crack pot sound after fracture of the cranium.

Spine: Pharyngeal palpation of the atlas, the axis, and the subsequent cervical vertebrae; spinal puncture, lumbar, dorsal, cisternal, epidural; previous preparation of the cadaver—fractures.

Neck and Thorax: Esophageal catheterization, esophagoscopy, gastroscopy; pleural, pericardial, etc., punctures; fractures of the ribs.

Abdomen: Palpation of the organs, followed by verification of the data obtained by autopsy; rectosigmoidoscopy.

Genito-Urinary Apparatus: Tactile vaginal examination; unrethroscopy, urethral catheterization; cystoscopy and ureteral catheterization; insufflation of the uterine tubes.

Extremities: It is possible to reproduce or imitate almost all the luxations and fractures by means of simple pressure. Injection of the synovial bursa of the knee permits one to note on palpation its superior and inferior limits, to feel its fluctuation, to provoke patellar impact, etc.

COMMENT

As is natural, preparation of the cadaver to obtain the type of luxation and fracture which it is desired to demonstrate presents difficulties at times; although it is a good method for imitating the common mechanism of fractures, the disappearance of tonicity and of muscular contraction causes the result to be varied; to avoid this one can have presses constructed, by means of which it is possible to exert gradual and circumscribed pressure in the place which one desires, pressure which can be sufficiently intense to produce fractures.

The experience which I have had up to the present time with the usefulness of these practices on the cadaver has convinced me of its effectiveness.

SUMMARY

Considerations are presented of the difficulties attached to the teaching of surgical propedeutics with regard to in-

dividual demonstration of signs and symptoms, the perception of which is purely subjective, i. e., the clinical difficulties due to the impossibility of having adequate patients at one's disposal at a given moment; and the dangers to which those patients are exposed when repeated explorations are made, particularly in the case of numerous groups of students. Utilization of the cadaver is advocated as an auxiliary to the teaching of this particular branch of clinical surgery. This method would preclude certain dangers to the living subject inherent in the demonstration of certain physical signs, such as crepitation of fractured bones, pateller impact, etc. A plan is proposed for teaching this branch of clinical work, the practical usefulness of which has been sufficiently demonstrated by the author in his course on surgical propedeutics at the University of Mexico School of Medicine.

DISCUSSION

Dr. André Crotti, Columbus, Ohio: I believe there is a lack of accurate knowledge of anatomy, and this paper falls well into the line of endeavor of the International College of Surgeons, which is not only to get together men of prominence all over the world but especially to center its attention on the younger generation of surgeons. This is the reason for the establishment by the College of surgical guilds or groups, and it is the desire of the College to have the younger generation of surgeons secure the necessary knowledge, in one line or another, which certainly is the fundamental principle of surgery. No one can be a great surgeon without also being an anatomist. Consequently, this paper is indeed timely.

Dr. Francisco Castillo Nájera, Ambassador from Mexico, stressed the necessity of anatomic teaching to younger men and its importance in medicine.

Dr. André Crotti, Columbus, Ohio: We have here today a man who has been largely instrumental in imparting to the International College of Surgeons the idea of surgical groups or guilds. The College owes him credit for the primary idea, because he started the formation of those surgical guilds in his own state. I have in mind Dr. Jepson, of Iowa.

Dr. William Jepson, Sioux City, Iowa: My name has just been referred to as one having imparted to the College the thought that men, in preparing themselves to render service more efficiently to their patients, could best do so by observing one another's work, and criticizing it. If it is poor, it should be so recognized and the individual told of it; if good, it should be complimented.

Some of those present may not realize what one of these guilds may be like when functioning for some time. It was my privilege, nearly thirteen years ago, associated with another physician, to select from the surgeons of our state some 35 members. I was fairly well acquainted with the surgeons of the state, and we formed a clinical society, which was to meet at least twice a year and observe the operative work of the surgeons located in the city where we happened to be meeting. We soon came to realize, first, that the number that could be well entertained and properly looked after in a group of that kind could not exceed 50, and, second, that they must be men possessed of a certain amount of clinical knowledge. We have never been short of having that full number of 50 men. In fact, we have a large waiting list, and at this time we have 32 of the members who met with us on the first occasion.

As to the value of the cadaver in surgical teaching, it has been my privilege, in past years, to be related to the teaching of surgery, and during that time the plan was used, although not sufficiently. I doubt if any surgeon can ever become too well acquainted with the anatomy of the human body; and unless we are acquainted with it we can hardly hope to render the efficient surgical service that we should.

One can learn how to make an incision in the abdomen and remove the appendix, and a few similar operations, but that is not surgery, in my opinion. The person who does that is just a special technician, and if he finds cancer in a portion of the colon, or a tumor, or some other condition, he may not recognize it. A physician who had been for some years an assistant demonstrator of anatomy was consulted by a woman for removal of a large abdominal tumor. He mistook the condition for unilocular ovarian cyst, and although he said he had never operated on an ovarian cyst and never done an abdominal operation, he undertook to operate. When the tumor was exposed it was revealed that the patient was in the eighth and one-half month of pregnancy. The one thing left to do was to remove the uterus. Had he ever seen that done before? No! What saved him was the fact that he knew where the ovarian artery was, and he knew how to tie it, which he did. He knew how to use a Thomas clamp and how to sew up the

incision. The patient recovered. That is what a knowledge of anatomy did for the patient.

Dr. Vincent A. Lapenta, Indianapolis: The paper of Professor Esnaurrízar is providential to this meeting, in view of the activities that we have proposed in the postgraduate teaching in the guilds of the College in every locality. It focuses attention on certain changing trends which we hope to correct, as far as the teaching of surgery is concerned.

In the last few years the teaching of anatomy in many medical schools has passed into the hands of the morphologist, who is often not even a physician, and whose great interest is in descriptive anatomy. And that teaching is supposed to supply the prospective doctor of medicine and surgery with a sufficient anatomic basis on which to build a surgical career. Our forefathers were wiser than we. They insisted on teaching surgery from the cadaver, the teaching to be done by clinical surgeons and not by an anatomist. I am glad to say that we are reverting to that. Knowledge of topographic anatomy in itself is not sufficient preparation for the practice of surgery. Therefore, study of the cadaver, as Professor Esnaurrízar pointed out, as a means of learning how to differentiate in the diagnosis and as a means of performing classic operations on proper anatomic foundation, comes back again as the proper foundation for the method of teaching, and, with it, the teacher must be a surgeon.

The prospective candidates who wish to obtain fellowship in our organization—and I am speaking of all the chapters of the College throughout the world—must give demonstrations of surgical ability on the cadaver and on the living before they can become a fellow member.

And so it gives me pleasure, as an officer of the guild activities, to ask all co-officers in their respective states to bear in mind that the new members must all qualify by examinations. Stress must be laid on demonstrations of surgical procedure on the cadaver, on differential diagnosis and on the surgical anatomy of a given operation. By enforcing this requirement the International College of Surgeons shall have brought about a *renaissance* in the teaching of surgery.

Dr. Thomas E. Jones, Cleveland: I am happy to endorse what has been said about the last paper. From my surgical experience on various parts of the body, I know of no operation in which a knowledge of anatomy serves one in better stead than in the one stage operation for cancer of the rectum. I have been interested in this procedure for many years and have performed many such operations. As I look back on my first cases, when I did not realize the importance of surgical anatomy, I must have appeared very cumbersome and awkward in the performance. After a few cases I followed closely the course as described by Miles, of England. That facilitates the procedure so much that it looks easy. It seems to me that the surgeons who get into difficulties with this operation are those who are not impressed with the importance of doing the operation in certain steps. I am sure that my original errors were made because I did not do the operation methodically. If one starts with ligation of the superior mesenteric artery, the first step, and does the other steps in logical order, the operation is simple. And that is done only by a thorough knowledge of the anatomy.

RÉSUMÉ

Utilité Didactique du Cadavre dans la Propedeutique Chirurgicale

On considère les difficultés inhérentes à l'enseignement de la propedeutique chirurgicale, en ce qui concerne la démonstration individuelle de signes ou symptômes, dont la perception est entièrment personnelle; difficultés d'ordre clinique dues à l'impossibilité de disposer à un moment donné de malades adéquats; dangers auxquels on expose les dits malades dans les explorations répétées, avec autant plus de raison s'il s'agit de groupes scolaires nombreux.

On préconise l'utilisation du cadavre comme auxiliair dans l'enseignement de cette clinique, en éliminant avec elle le péril que présente pour le vivant la démonstration de certains signes physiques: crépitation osseuse, choc rotulien, etc. On formule ensuite un plan didactique de cette sorte de travail clinique, dont l'utilité pédagogique a déjà été démontrée par l'auteur au cours respectif dont il est chargé à la Faculté de Médecine de Mexico.

ZUSAMMENFASSUNG

Die Nützlichkeit der Leiche in der chirurgischen Propedeutik

Betrachtungen der Schwierigkeiten gebunden an den Unterricht der chirurgischen Propedeutik mit Berücksichtig-

ung individueller Demonstrationen der Symptome und Anzeichen, deren Erkenntnis eine rein subjective Angelegenheit ist, die klinischen Schwierigkeiten die Unmöglichkeit eine ausreichende Zahl von Patienten zur Verfügung zu haben, die Gefahren denen die Patienten ausgesetzt sind besonders bei wiederholten Untersuchungen in Fällen wo zahlreiche Gruppen von Studenten teilnehmen. Der Gebrauch der Leiche ist gerechtfertigt als ein Hilfsmittel im Unterricht dieses besonderen Zweiges der Klinischen Chirurgie. Diese Methode wurde ausschliessen manche Gefarmomente denen ein lebendes Objekt unvermeidlich ausgesetzt wird während Demonstration mancher physikalischen Symptome, wie Krepitation bei Beinfrakturen, Keilfrakturen der Patella u. s. w. Ein Plan wird vorgeschlagen für den Unterricht dieses Zweiges der Klinischen Arbeit, dessen praktischer Wert ausreichend vom Verfasser in seinem Kurs der chirurgischen Propedeutik an der Universität der Mexico School of Medicine demonstriert wurde.

SUMARIO

Utilidad Didáctica del Cadaver en Propedeutica Quirurgica

Se consideran las dificultades inherentes a la enseñanza de la propedéutica quirúrgica, respecto a la demostración individual de signos o síntomas, cuya percepción es enteramente personal: dificultades de orden clínico, debidas a la imposibilidad de disponer en un momento dado de enfermos adecuados; peligros a que se expone a dichos enfermos en las exploraciones repetidas, con mayor motivo si se trata de grupos escolares numerosos. Se preconiza la utilización del cadáver como auxiliar en la enseñanza de esta clínica, eliminándose el peligro que para el vivo presenta la demostración de ciertos signos físicos: crepitación ósea, choque rotuleano, etc. Se formula a continuación un plan didáctico de esta clase de trabajo clínico, cuya utilidad pedagógica ya ha sido demostrada por el Autor en la cátedra respectiva, que es a su cargo en la Facultad de Medicina de México.

RIASSUNTO

Utilita didattica del cadavere nella propedeutica chirurgica

La difficoltà dell'inseguamento della propedeutica chirurgica, in riguardo alla dimostrazione individuale di segni e sintomi la cui percezione è puramente soggettiva; la difficoltà d'ordine clinico di avere, al momento opportuno, i malati necessari; e i pericoli a cui questi pazienti sono soggetti, dopo ripetuti esami, specialmente con numerosi gruppi di studenti, sono discussi dall'autore.

L'utilizazzione del cadavere, come ausiliario all'inseguamento di questa particolare branca di chirurgia clinica, viene raccomandata. Questa metodo escluderebbe quei pericoli per il soggetto vivente, che sono inerenti alla dimostrazione di certi segui fisici, come per esempio la crepitazione di ossa fratturate, l'impatto patellare, ecc., ecc.

Un programma è proposto per l'insegnamento di questa branca clinica, la cui utilità pratica è stata sufficientemente dimostrata dall'autore nel suo corso di propedeutica alla Facolta Medica dell'Università del Mexico.

THESES FOR CANDIDATURE FOR FELLOWSHIP SHOULD BE ADDRESSED TO THE CHAIRMAN OF THE COUNCIL OF EXAMINERS OF THE INTERNATIONAL COLLEGE OF SURGEONS, 705-711, K. OF P. BUILDING, INDIANAPOLIS, IND.

INCOMPLETE DUODENAL DIAPHRAGM AS A CAUSE OF INTESTINAL OBSTRUCTION

REPORT OF A CASE*

CHARLES EDWARD NAGEL, PH.G., M.D., F.A.C.S., F.I.C.S.

From the Surgical Service of the Columbus Hospital

GREAT FALLS, MONTANA

ON the genesis of duodenal malformations, embryologists state that at about the fifth week of fetal life, the primitive gut, by the proliferation of the intraluminal epithelial cells, becomes a solid tube, which plug of proliferated epithelial cells shortly thereafter begins to undergo regression by a process of vacuolation. The end result of this process is the re-establishment of the normal gastro-intestinal lumen. When anomalous conditions are considered, one finds no unanimity of opinion. One group of embryologists believes that the malformations are due to some faulty process during the vacuolation of the epithelial plug. A second group advances the theory that, as a result of amniotic fluid entering the primitive gastro-intestinal tract, an intraluminal inflammatory reaction is produced which retards or prevents the process of vacuolation. I incline to the opinion of the first group. The cause of the incomplete regression of the proliferated epithelial plug during the process of vacuolation has not been determined.

The three types of malformations of the duodenum usually described are: *atresia, stenosis,* and *diaphragms.* The incidence of congenital obstruction in the newborn has been estimated as 1 in 20,000 cases (Farr and Fries), and it would seem from a review of the literature that diagnosed cases due to diaphragms are more rare than cases of atresia.

In *atresia* there is either absence or complete closure of a section or segment of the duodenum. In *stenosis* there is either hypertrophy of the wall of the intestinal segment or of the mucous membrane, or both, resulting in blockage of the lumen. *Diaphragms,* which may occur in any portion of the duodenum, have been classified as: complete, incomplete, and the iris type. Structurally they are comparatively thin musculomembranous partitions.

DIAPHRAGMS

Histologically, diaphragms are of the same cellular pattern as the segment of intestine from which they have developed. They usually consist of mucous membrane and submucosa, with occasionally a few muscle fibers at the base.

These septums in the embryo, which remain as diaphragms, may be situated above or below the ampulla of Vater or in the inferior portion of the duodenum. Their completeness or incompleteness in conjunction with their intraluminal position, tending in some cases to an obstructive lesion, may precipitate early evidence of high obstruction; in other cases obstruction becomes manifest in later life. In fact, according to statistical data, many are found only at post-mortem examinations, although the patients may have had a history suggestive of gastroduodenal disease, with no definite diagnoses having been made (cf. Nagel's patient, *72* years old). Those diaphragms which precipitate symptoms and signs of high obstruction do so early, either by their completeness or their incompleteness, while the third

*Thesis for Fellowship in the International College of Surgeons.

type or even the second type with sufficient aperture evokes symptomatology of less serious magnitude, unless occluded by a definite ingested mass, a bolus of food composed of roughage, for example, which cannot pass through the aperture, thus inducing a mechanical obstruction. It is in the incomplete type, in which the aperture is relatively small, that the greatest difficulty is experienced in reaching a diagnosis, without any regard to its intraluminal position. From a survey of the literature, the iris type of diaphragm seems to be the least dangerous. This type is usually not diagnosed and may be found during exploration of the gastro-intestinal tract or only at autopsy.

Anatomic and Physiological Features. Obstruction by a diaphragm with an aperture insufficient in size to permit even rapidly ingested fluids from passing through the aperture with a sufficient rate of flow to prevent the over-accumulation or flooding of the proximal side of the intestine may be compared to the pouring of fluid into a funnel with a small outlet.

A review of the salient anatomical features of the duodenum, which play a definite part in the mechanics of the obstruction and the distention, is necessary. With the exception of the superior portion of the duodenum and the duodenojejunal flexure, the duodenum is retroperitoneal and fixed to the posterior abdominal wall without a mesentery. It is roughly a horseshoe-shaped structure, with its concavity to the left, housing the head of the pancreas. Its convexity is to the right and comes in close proximity to the right lobe of the liver above and anteriorly, and to the right kidney. At about the middle of the descending portion it is crossed by the transverse mesocolon, and in the region of the left half of the inferior horizontal portion it rests on the abdominal aorta, the vena cava inferior and the vertebral bodies. It is crossed anteriorly by the mesenteric root and its contained superior mesenteric vessels. It is between this root and the abdominal aorta that the ascending portion begins. Unlike either the stomach or the small intestines, distending forces can displace it only in those directions offering the least resistance; retroperitoneally, this would be limited to the ability of the distention to exert force against the peritoneum, the mesenteric root, and the inferior portion of the pancreatic head; the descending portion meets resistance from the pancreas on the left and the kidney and liver on the right, with the peritoneal reflection, as in the case of the inferior portion, almost completely covering it and binding it to the posterior wall. It is only the superior portion and its flexure which are reasonably mobile, so that distending forces, whether gaseous or liquid, may and can exert themselves in all directions, and always along the line of least resistance.

The abnormal anatomic condition initiates a picture of abnormal physiology, which expresses itself in recurrent attacks of copious vomiting, the vomitus, depending on the site of the obstructing diaphragm, being occasionally or persistently bile stained. The clinical picture of malnutrition is present also. The normal peristalsis may show definite reversal, suggesting a peristaltic cutaneous wave propelled forward, meeting resistance, and causing a reverse peristalsis. This is a manifestation of high intestinal obstruction.

Differential Diagnosis. Despite the increasing tendency towards specialization, pediatrics is the province of the physician. It is during the period of what one likes to term obstetric pediatrics that intelligent diagnosis and treatment are of the utmost importance. It is my belief that anthropometric characteristics of the newborn, unless grossly deviated from the normal, only vaguely or not at all reflect the physiologic and

neuropsychologic constitution of the individual. With such a thought in the background, those dealing with the problems as related to infancy and early childhood should avoid the pitfalls of empiricism. Early diagnosis will mean avoidance of delay, which, in cases of obstruction, is costly.

In cases of congenital obstruction, the following must be given consideration:

1. Congenital malformations of the upper gastro-intestinal tract, both intraluminal and extraluminal. In the first group of intraluminal malformations belong atresia, stenosis and diaphragms. Intraluminal new growths and, likewise, intussusceptions must be considered. Extraluminal conditions include incomplete rotations, herniation at the fossa of Treitz, duodenal compression by the superior mesenteric artery and vein, and adhesions due to peritonitis, prenatal and postnatal.
2. Retroperitoneal neoplasms and neoplasms of the kidney or pancreas.
3. Inflammatory lesions within the duodenum, such as duodenitis and ulcer.
4. Imbalance of the vegetative neuromechanism.

Many basic normal values or deviations from the normal values may be determined by complete laboratory examination. The author believes that such records are of value, if and when obtained, in rationalizing complications. Blood chemistry, chlorides, phosphates, calcium and the blood and urine diastase tests may yield information of value.

In making the diagnosis one should, then, consider not only the primary lesion but also those factors which aid in estimating the patient's chances for recovery.

Complications. Although one may exert every effort and use every facility to estimate the patient's condition, too often troublesome and sometimes fatal complications occur. They are undeterminable by the clinical laboratory aids now at one's disposal and are unpredictable. However, all complications are due to perverted or inhibited physiologic functions, as a result either of inherited or congenital conditions or of acquired conditions. In any case, trauma, inflammatory processes of either the infectious or noninfectious types, and new growths—benign or malignant—are to be considered as etiologic factors.

CASE REPORT

R. A. B., a girl aged 12 months, born of Russian parentage, was admitted to the surgical service August 20, 1938. The diagnosis on admission was "upset stomach." The physician admitting her considered the case a problem of feeding and malnutrition. She was a breast-fed infant. At the time of admission she weighed 12 pounds and 4½ ounces (5,571.49 Gm.); length, 26 inches (66.04 cm.).

Family History. The child was born into a typical peasant family, the last of a series of 12 in order of birth. Five sisters and five brothers were living and apparently well. One brother had been born with a cleft palate and harelip. One pregnancy had terminated at seven months with a dead fetus. The family, from a psychologic and sociologic study, was below average. There was a tendency to inebriacy in both parents.

Present and Past Illnesses. The mother stated that the child had been a problem since birth and that during her lying-in period she had mentioned to the attending physician that the infant seemed to vomit too much at one time and too often. At home the baby did not gain in weight and had recurrent attacks of vomiting both of the ordinary spilling type and the projectile type. The amounts vomited were always of large volume. This vomitus was at times clear but bile stained and at intervals had the appearance of "pea soup." The stools had varied in color from very light yellow to putty or clay colored. The mother could not recall any other diseases common to infancy.

Physical Examination. The child gave one the impression of premature ageing. The skin was fair but of poor turgor. The fairness of the skin was accentuated by dark brown eyes and very fine auburn hair. Her facial expression was anxious as though appealing for help. Her cry, shrill and reedlike, gave one the impression of pain and discomfort. Although the general muscle tone was poor, she had sufficient strength to raise herself to a standing position, with the crib rail as support. When lying down she was usually found in the prone position, which seemed to give her considerable comfort and relief.

Head: This was normal in size and contour. The anterior fontanel was open. Owing to

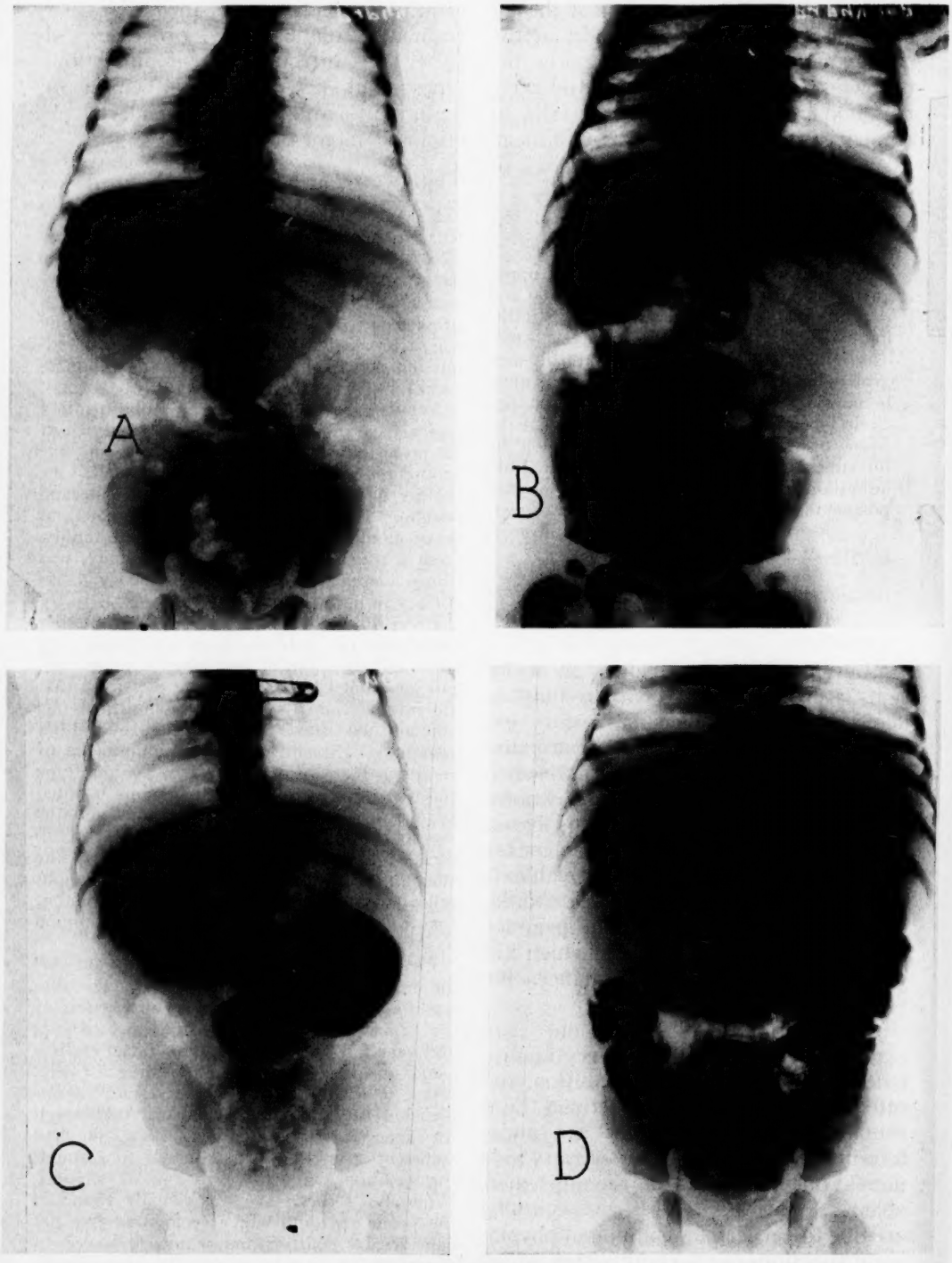

Fig. 1. Roentgenograms showing congenital duodenal obstruction. *A*, immediately after barium meal. *B*, one hour after barium meal. *C*, five hours after barium meal. *D*, six hours after barium meal.

the state of malnutrition, the head appeared large. The nasopharyngeal structures, eyes and ears were normal. Eruption of the teeth had been uneventful, and the gums were normal.

Neck: This was scrawny; no glandular enlargements and no abnormal pulsations were noted.

Thorax: The contour was normal, with a slight rachitic rosary. Heart and lungs were normal.

Abdomen: This was "pot-bellied." The distention was predominantly and at all times in the upper quadrants. Repeatedly a persistaltic wave was observed, which began in the left upper quadrant, and progressed downward and inward toward the umbilicus, at which point it was deflected upward and outward, stopping at the right hypochondrium. No definite masses could at any time be palpated, nor did the child register pain or discomfort during such examination; on the contrary, the manipulation seemed to have a soothing effect. No auscultatory examination was done, which was an oversight on my part.

Extremities: Except for loss of subcutaneous fat, poor muscle tone, and poor turgor of the skin, examination gave negative results.

Neurologic Examination: This was also negative.

Laboratory Reports. A study of the case record prior to September 13 indicated that little or no work of value had been accomplished other than one blood count, which indicated a secondary or nutritional anemia. In order to orientate himself, the author submitted the child to a therapeutic test with atropine sulfate solution, 1:1000 (0.1 Gm. in 100 cc.), one drop four times a day. Under this therapy the vomiting was controlled for two days, after which it again became an annoying problem. One cannot state that the medication in any way influenced the vomiting. On September 15, having completed the preliminary history, physical examination and observations, including the test to rule out pylorospasm, the author felt justified in recording the following impressions: (1) *congenital obstruction of the duodenum,* (2) *duodenitis,* (3) *duodenal ulcer.* The following measures were resorted to:

Gastric drainage yielded 400 cc. of fluid. Normally in children the volume is about 80 to 110 cc. Analysis of the contents showed 400 cc. of green fluid, with a total acidity of 36 per cent. The free hydrochloric acid was 13 per cent and the combined acidity 23 per cent. There was a trace of bile. The blood chemistry was negative. The blood count indicated a slight increase in red blood cells but not sufficient to warrant the opinion that there was any improvement in the nutritional anemia. The x-ray findings showed an *incomplete congenital duodenal obstruction.*

Diagnosis. The following impressions seemed admissible: (1) Dilatation of the stomach was present, resulting in a residual volume content three times that which one finds in a normal child's stomach at the age of 12 months; (2) repeated and excessively large volumes of vomited fluid were tending to dehydrate the child, there being a constant drain on the sodium and chloride ions; (3) as in all persistent high obstructions, such continued loss would tend to precipitate alkalosis and possibly also tetany; (4) the obstructing lesion was below the ampulla of Vater, since the stool usually contained little, if any, of the bile pigments and salts, and the vomitus always was bile stained in appreciable visual amounts; (5) tentatively the author considered the obstructive lesion to be in the descending or the transverse portion of the duodenum, below the ampulla of Vater. The fact that such lesions at the fossa of Treitz may also occur was kept in mind; also, the possibility of an incomplete rotation of the gastro-intestinal tract was considered.

The consulting gastro-enterologist stated: "From the history and the clinical and roentgenographic findings, this patient appears to have a benign obstructing process of the duodenum. It is apparently not amenable to medical treatment, and such being the case, surgery is the only alternative The child's condition is as good as possible with the lesion present."

The dietary regimen was as follows: Small quantities of semisoft foods were alternated hourly with small volumes of milk and cream. The soft diet formula was rich in the essential vitamins. I felt that in order to prepare this child properly for surgical intervention such a regimen, comparable to the one used for patients with ulcer, was most likely to yield the best results, with omission, of course, of the alkalis. The infant was kept on this regimen from September 15 until the day of intervention. Her condition was retrograde.

Operative Procedure and Pathologic Findings. Under drop-method ether anesthesia, the abdomen was explored on September 21. The total operating time was 1 hour and 15 minutes. An upper right incision was made, exposing the abdominal contents. The stomach and the duodenum were found to be greatly distended with gas, and in the duodenal portion there was still considerable fluid, although pre-operative aspiration had been done. The pylorus was markedly distended or stretched, so that the combined distention separated by

the stretched but still constricting pylorus, at the first observation, gave one the impression of an hour-glass stomach. After careful exploration, especially in the region of the fossa of Treitz, and also in that of the superior mesenteric vessels, at which regions no additional pathologic changes were noted, it was decided to explore the descending and transverse portions of the duodenum. With the exception of a few fragile adhesions in the region of the first portion of the duodenum and gallbladder and with the exception of the stretched pylorus and the postpyloric distended duodenum, nothing specific was found. A small incision was made into the duodenum, through which gas and thin greenish fluid welled, deflating the stomach and emptying the duodenum of its contents. The gross deformity of the stomach and the duodenum no doubt prevented the tube from reaching fluid contained in the dilated and distended duodenum. The marked distention of the stomach, even though pre-operative aspiration had been accomplished with good return of fluid, may readily be considered as being due to aerophagia during the early stages of anesthesia. The duodenum having been opened, a finger was introduced in its lumen and exploration carried on, until an intralumenal obstructing region was found in the transverse portion, to the right of the vertebral bodies. The obstructing body seemed flexible and had a small aperture through which the tip of the exploring finger could be passed, but with a sense of resistance comparable to that which the finger meets in digital exploration of a small, circular-type, virginal hymen. Withdrawal of the finger gave one the impression or sensation of a circular constriction slipping off the finger tip. This exploration having been completed and confirmed by my assistant, I felt that the pathologic findings confirmed my pre-operative diagnosis of incomplete congenital duodenal obstruction. The surgical pathologic diagnosis was *incomplete congenital duodenal obstruction,* resulting from a diaphragm with small aperture.

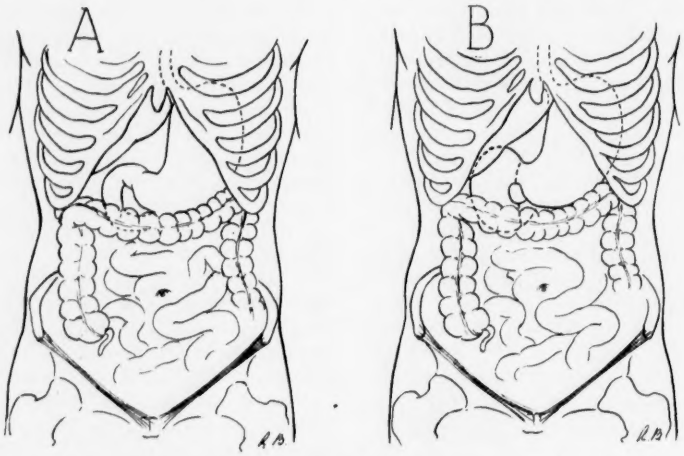

Fig. 2. *A,* schematic representation of the normal relationship of the stomach and duodenum. *B,* schematic representation of the acutely dilated stomach and the duodenum, with the pyloric ring, placed on an acute stretch so that the gastroduodenal distention gives the appearance of an hour-glass stomach. The usual sites for this congenital obstruction are either in the neighborhood of the papilla of Vater or at the duodenojejunal juncture. The former is twice as common as the latter. The obstruction in the author's case was at the duodenojujunal juncture.

A duodenojejunostomy was attempted as the corrective measure of choice. The hepatic flexure of the colon was grasped gently, and slight traction was exerted on the mesocolon, thus exposing the posterior peritoneum and the mesenteric root. With the finger as a guide in the lumen of the inferior portion of the duodenum, the tip touching the obstruction, an incision was made through an avascular portion, exposing the retroperitoneal duodenum, through which the incision was continued, the opening made being about 2 cm. long. No anomalous condition was found in the region of the mesenteric root, which was to the right of the incision, nor could the obstruction have been caused by the superior mesenteric artery and vein, which structures

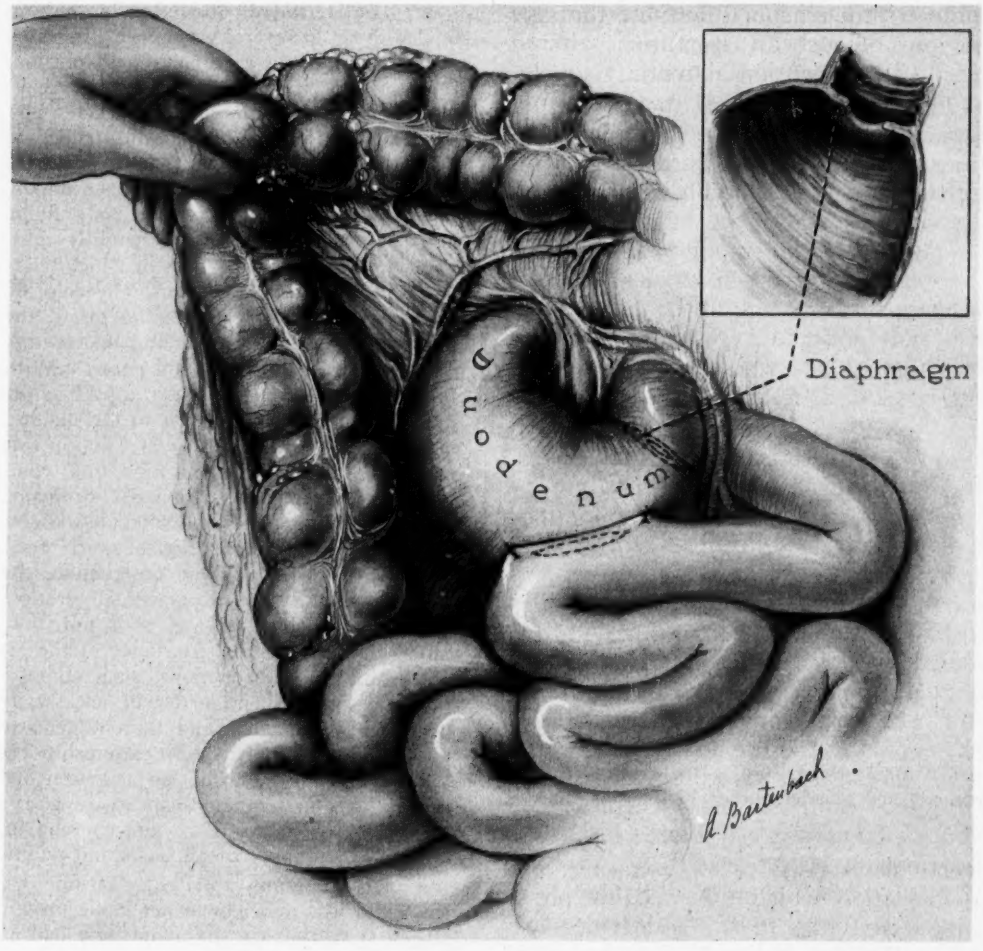

Fig. 3. Drawing showing retroperitoneal portion of the duodenum and jejunal loop with stoma. The insert shows the completed anastomosis.

were freely movable. A segment of the jejunum was brought over to the site of the exposed duodenum, and an anastomosis with silk was completed. The appendix was visualized and found normal. The abdominal wound was closed in layers, one cigaret drain being left in place.

Postoperative Course. Immediate recovery from the anesthesia was satisfactory, but about 2:30 P. M. the rectal temperature rose to 107° F.; the pulse rate could not be counted at the wrist; this was accompanied by a convulsion. Calcium gluconate and parathyroid hormone were given intramuscularly and seemed to exert a beneficial effect. No further convulsions occurred. Subcutaneous fluids were forced and shock treatment instituted, but progress was poor, and the child died at 5 P. M. Regrettably, no autopsy could be obtained.

COMMENT

The mechanics in the case reported here seem to be as follows: With the fixed portion of the duodenum proximal to the diaphragm greatly distended, and the segment distal to it in a state of normal tone, the weight of the mesenteric root and its vessels acted in such a manner as to prevent the aperture between the two from tending to enlarge from the distention, but it remained fixed or even became smaller. It is

quite within reason to assume that the contour of such an aperture is altered due to the distention above.

The malformation of the duodenum here described set up a train of malfunctions in the physiologic processes of digestion and assimilation, such as re-

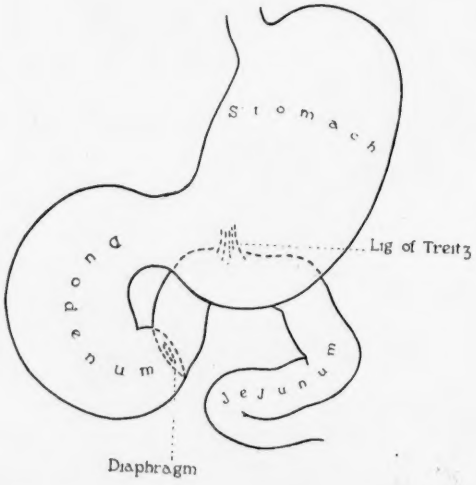

Fig. 4. Drawing showing the greatly distended stomach and superior portion of the duodenum.

verse peristalsis, reflex vomiting, and dehydration, which influenced the physiologic activities of the endocrine-vegetative-nervous system and the *p*H of the tissues and body fluids essential to life. Inorganic and organic chemistry and the physiology of the body as a whole were affected.

COMPLICATIONS

The complications in the case here reported may be explained as follows:

1. The genesis of the anatomico-physiologic lesion was defective development of the duodenum.

2. The distention and the dilatation of the stomach and the duodenum, with the excess fluid and possibly also the irritating action of the partially digested and fermented food material, induced repeated attacks of vomiting.

3. The repeated attacks of vomiting tended to act in several ways: (a) Ingested food, except for a relatively small portion, rarely was completely digested and reabsorbed in the gastro-intestinal tract. (b) The repeated attacks of vomiting tended to keep the body in a state of dehydration. (c) The obstruction being high, the important basic constituents of the body fluids and tissues were being constantly lost, namely, the sodium ions, loss of which tends to rapid dehydration, and also the chloride ions, loss of which changes the *p*H of the body and tissue fluids, tending to expedite the onset of an alkalosis and tetany. With the chloride loss there is also a loss in the carbonic acid, both essential in the maintenance of the normal *p*H. (d) Thus in this case with almost constant fluid loss, comparable to prolonged duodenal drainage, with the second factor of incomplete digestion and poor assimilation of such food material as passed by the obstruction, the patient was in a state of partial dehydration, with a very labile *p*H and poor nutrition. Since relatively normal constancy of the *p*H is essential to all functions, such etiologic factors as aforementioned will necessarily upset such a balance and thereby tend to alter the intimacy of the relationship between the glands of internal secretion and the nervous system, in this case especially the vegetative nervous system, thereby increasing the danger of alkalosis and tetany.

4. Also, one may apparently assume that this child was deficient in her labile protein stores, first, because she at no time had an adequate intake of protein which completed the process of digestion and assimilation, owing to her repeated attacks of vomiting, such food elements as did pass by the obstruction not being sufficient to maintain a relatively stabile protein store; second, because over the period of a year no effort had been made in any of her treatments to sustain her nutrition, other than by the process of empiric therapeusis. Whether the obstruction is in an infant or an adult, it is obvious that, instead of physiologic stability, a potential physiologic lability is created. In these cases the balance is further altered by pharmacologic reactions and physiologic reactions due to such a drug as atropine and to surgical shock with pictures such as will be outlined.

The patient was not given the benefit of a complete laboratory work-up which

might have thrown more light on the condition. The diastase tests especially would have been of value, since the mechanics of the distended duodenum tended to alter the tonicity of the sphincter of the common biliary-pancreatic ampulla (papilla duodeni major), the ampulla of Vater and also the sphincter of the accessory pancreatic duct (papilla duodeni minor), so that the possibility of a reflux of the gastroduodenal contents into the pancreas is not to be ignored. Such abnormal contents, I believe, would tend to change the normal pancreatic function by setting up a low grade pancreatitis.

Effect of Atropine. A complication which has been observed prior to surgery in several cases of high obstruction concerns the use of atropine. In each of the four recent cases observed (the one under my care and three called to my attention by a colleague), the use of atropine sulfate solution 1:1000 (0.1 Gm. in 100 cc.) has resulted in a marked rise in temperature. I believe that with the ablation of the vagus nerves and the vagus nucleus, with increase in the esterase content and inhibition of the production of the choline bodies or substances there is an immediate overactivity of the sympathetic nervous system, probably with the overproduction of bodies or substances referred to as sympathins, which is also due to the overactivity of the center of the sympathetic system in the hypothalamus. Temperature increase is the result, with an accompanying increase in the metabolic processes, which, in my opinion, is not helpful in these cases, which show poor nutritional balance and a state of potential, if not marked, dehydration resulting from continuous vomiting or excessive vomiting over a prolonged period of time. I believe that further dehydration results from the use of the drug, since with a temperature increase there is marked increase in perspiration, with a decrease in the renal output, and that such dehydration increases the danger of precipitating an alkalosis and its more serious sequela, tetany. Even though one attempts to avoid these disagreeable complications by supplying the dehydrated patient with fluids by the several accepted methods, the results are not always successful. This complication may be considered pharmacologic. I found no reference to it in the literature at my disposal. Some works mention that this drug tends to cause a rise in temperature, but no explanation is offered for the phenomenon.

Shock. In this case and in two others of high obstruction, all in a state of partial dehydration and poor nutritional balance and therefore possibly with a low or labile serum protein level due to prolonged vomiting, profound shock with severe convulsions resulted in from four to six hours postoperatively. This syndrome appeared, although attempts were made to replenish fluid loss immediately after operation. Comment is herewith made on the possible etiologic factors which enter into these complications, and certain suggestions are made for postoperative care which might tend to prevent these complications. In fact, certain measures have been found reasonably beneficial and if instituted early might be life saving.

Surgical shock, as one now understands its production, is the overstimulation of the sympathetico-adrenal system by and through the sensory nerve impulses. This presumably results in a vasoconstriction of the arterioles of the splanchnic and cutaneous areas, with a concomitant vasodilatation of the vessels of the skeletal muscles. Obviously in a dehydrated person this is a very undesirable reaction, since it tends further to remove from the circulation the essential plasma with its contained serum protein and the soluble salts of calcium, sodium, potassium and magnesium, and also those of the soluble phosphates in

ionizable form. By such pooling or stagnation of the plasma, no doubt, one further changes the *p*H of the body fluids, which tends to cause an imbalance between the soluble and insoluble calcium ions, also, through the change in the *p*H, to interfere with the proper action of the parathyroid gland and its hormone. One may assume that with the *p*H in dehydrated individuals ranging toward the alkaline phase, the serum albumin will, since it has amphoteric properties, link itself more readily to the ionizable calcium and in this way alter the calcium concentration, so that tetany in these cases is readily precipitated. With the removal of the blood plasma, such dehydrated patients are quickly and, on occasion, dramatically thrown from a state of stability into one of lability with resulting alkalosis and tetany. In the case here reported and in one of stenosis, favorable results were obtained by the use of parathyroid hormone and calcium gluconate, supplemented by magnesium sulfate, injected intramuscularly at intervals. This therapy was dramatically effective in both cases in controlling and preventing further convulsive seizures. In the third case which I saw, the patient did reasonably well, but a very interesting fact was that, although the child ceased breathing, it was possible to resuscitate it with inhalations of carbon dioxide; however, as soon as oxygen was employed the child had convulsions, became cyanotic, and ceased breathing. This demonstrated very well the activating of tetany in a dehydrated patient by hyperventilation.*

This case also demonstrated another interesting fact. It was observed that with fluid intake restricted to water no convulsions occurred, but when mother's milk, although low in phosphate content, was substituted, convulsions were precipitated. It must be noted that this case was further complicated by a secondary wound infection, which caused a rise in temperature, a condition not at all desirable in a relatively normal case and certainly not in one instabile due to dehydration.

CONCLUSIONS

1. One often overlooks the physiologic instability of patients. Too often one is lulled into a false security by expectantly giving fluids by the several routes, forgetting that, in cases of high obstruction, the patient has been deprived of the essential products of digestion and the assimilation of these products in that portion of the small intestine distal to the site of the obstruction and its degree of occlusion influence the picture.

2. Shock presumably increases the permeability of the capillaries, tending thereby to encourage the leakage of plasma into the tissues of the viscera and muscle. The volume so removed from the general circulation is reasonably large and its diluent value is lost along with the neutralizing and stabilizing values of its contained solutes. Fluid and solutes so removed no longer play any part in vital function and especially in maintaining a stabilized hydrogen ion concentration essential to vital function. With such deviations from the normal, the intimacy of the relationship between the vegetative nervous system and the glands of internal secretion is thrown into a state of imbalance and tetany is more likely to occur.

3. One would do better not to dehydrate infants and children further by the routine treatment of excessive coverings and packs of hot water bottles, presumably with the idea of combating shock, even though fluid is being given

*In discussing the treatment of the tetany syndrome in the newborn, Shannon has called attention to the precipitation of calcium salts at the site of local injections of calcium gluconate and also at points in the body remote from the site of injection. In the cases reported by him reabsorption eventually occurred, apparently without damage, but further consideration must be given to the facts he has presented.

to replenish the loss. The excessive sweating which occurs hinders the purpose and decreases the value of the fluids given in that salts and water are lost, but the static fluid within the tisues, as before mentioned, is not appreciably influenced. The result seems to be that within a few hours a state of delayed or secondary shock is more forcibly precipitated. This is true in the type of cases under consideration, in which dehydration accompanied by nutritional imbalance is present. It would seem more logical, physiologically, if the postoperative treatment of patients such as these were carried out in a room of moderately elevated temperature and only the lightest of bedclothes used. Fluid replenishment then, if given slowly, will have beneficial effect, and at the same time effort should be made to support the circulatory system by overcoming the excessive stimulation of the sympathetico-adrenal system.

4. High obstruction, by its tendency to dehydrate and place the patient in a poor state of nutrition, makes him a poor surgical risk. Although this is an accepted fact, it seems to be too often ignored pre-operatively and postoperatively. In spite of the very splendid contribution to the subject by Stenson, it seems logical to assume that, for purposes of alimentation, some avenue should be found for introducing the necessary fluids into the system outside of parenteral medication. Further studies in this direction may throw some light on the problem.

Stenson, whose study of the literature on duodenal occlusion in the newborn revealed "several hundred reported cases in which there were only 15 recoveries," including his own case, considers enterostomy fatal in the newborn. Enterostomy may be impossible because of a narrowed lumen or contraction from disuse. He states that gastro-enterostomy, duodenojejunostomy, entero-enterostomy and ileocolostomy are better tolerated and are the safest procedures when they are strictly indicated. He points out the fact that a collapsed bowel may simulate the appearance of atresia. The presence of a lumen was not established in his case until a transduodenal band was cut and a kink in the intestine was straightened out, after which the seemingly atretic duodenum ballooned out with the passage of air. The operation, which was performed on a premature twin, soon after birth, had to be interrupted several times because of surgical shock. The wound was covered with a moist laparotomy pad and a couple of minutes were allowed. Such moments of respite, he believes, played an important role in the patient's recovery.

In any event, the critical condition of the patient is no contraindication to operation, as death would occur inevitably without such surgical intervention.

5. In cases in which, due to prolonged vomiting, dehydration has produced a physiological imbalance bordering on an alkalosis, administration of carbon dioxide inhalations postoperatively is a valuable adjunct in preventing and combating tetany. It was demonstrated in one case that hyperventilation induced by the use of oxygen precipitated tetany which was controlled by giving inhalations of carbon dioxide. The carbon dioxide seemed to re-establish, even though transitorily, physiologic stability probably by temporary reversal of the hydrogen ion concentration from the alkaline phase to one within the neutral range and therefore more equitable to sustain the essential vital functions. This observation seems to be supported by accumulated data in the literature.

SUMMARY

1. Congenital obstructions of the small intestine, of which the case here reported represents one type, are no

longer considered surgical oddities to be considered with a pessimistic attitude.

2. Literature confirms the opinion that empiric therapeusis without a diagnosis tends to turn a fair risk into one of physiologic instability, and that although surgery has been made safe for patients, infants come to surgery physiologically as poor risks, due to delayed diagnosis.

3. This case represents one of the failures resulting from delayed diagnosis, the symptoms having been interpreted as due to one of the more common causes of vomiting.

For their valuable assistance and cooperation, I wish to thank Doctors F. Silvernale, Thomas Walker, and Charles Little.

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RÉSUMÉ

Obstruction intestinale due à un diaphragme duodénal incomplet

1. Les obstructions intestinales de l'intestin grêle ne sont plus considerées comme des raretés chirurgicales qui doivent être envisagées d'un point de vue pessimiste.

2. Quoique que la chirurgie n'entraîne aucun péril pour le malade, les malades ne sont addressés au chirurgien que dans un état désavantaguex vu le retard du diagnostic.

3. Le cas rapporté est un exemple des insucces dû à un diagnostic retardé, les symptômes ayant été interprétés comme dus à une des causes ordinaires de vomissements.

ZUSAMMENFASSUNG

Unvollständiges Duodenal Septum als Ursache von Darmverschluss

1. Fälle von angeborenem Dünndarmverschlufs, wovon der hier beschriebene Fall einen Typus darstellt, dürfen nicht länger für chirurgische Seltsamkeiten mit schlechter Prognose angesehen werden.

2. Die Litteratur bestärkt die Ansicht, dass empirisches therapeutisches Handeln dazu angetan ist, aus einem geringen wagnis ein solches von physiologischer Anbeständigkeit zu machen, und dass, obleich chirurgischer Eingriff eine gute Chance für die Patienten bietet, Kinder meistens mit physiologish schlechten Chancen zur Operation kommen, wegen der verspäteten Diagnose.

3. Dieser Fall stellt einen solchen versager wegen einer verspäteten Diagnose dar. Die Symptome waren gedeudet worden als Folge einer der üblichen Ursachen für Erbrechen.

SUMARIO

Diafragma Duodenal Incompleto como Causa de Obstrucción Intestinal

1. Obstrucción congénita del intestino menor, del cual el caso reportado aquí representa un típo, no son mas consideraros como rarezas quirúrgicas y tratados con pesimismo.

2. La literatura confirma la opinion que la terapéutica empírica tiende á transformar un caso de poco riesgo á uno de inestabilidad fisiológica, y que aunque cirugía ha sido hecha sin riesgo para el enfermo, los niños vienen á cirugía como riesgos muy pobres, debido al diagnóstico demorado.

3. Este caso representa uno de los fracasos resultando de la demora en el diagnóstico, los síntomas fueron interpretados como los correspondientes á la causa mas comun de vómitos.

RIASSUNTO

Ostruzione intestinale dovuta a diaframma duodenale incompleto

1. Le ostruzioni congenite dell'intestino tenue non sono più considerate come rarità chirurgiche; da trattarsi con un punto di vista pessimistico.

2. Sebbene la chirurgia non porta pericolo per il paziente, spesso il malato viene diretto al chirurgo, in uno stato disavvantaggioso, per una diagnosi protratta.

3. Il caso riportato è un esempio degli insuccessi dovuti a una diagnosi protratta, chè la sintomatologia del caso era stata interpretato come dovuta a cause ordinairie di vomito.

Plans for the establishment of the **American Museum of Health** were announced at dedication ceremonies held in the Hall of Man in the Medicine and Public Health Building at the New York World's Fair on June 17. The Carnegie Corporation, the Rockefeller Foundation, the Oberlaender Trust and the major life insurance companies have made possible the founding of the museum and acquisition of most of the displays at the Medicine and Public Health Building. These exhibits will be maintained and expanded in a permanent health teaching center in New York City at the end of the fair. At the formal exercises dedicating the museum, **Dr. Livingston Farrand,** President Emeritus of Cornell University, presided, and the speakers included **Mayor La Guardia; Grover A. Whalen,** President of the Fair, and **Drs. Edward S. Godfrey, Jr.,** Albany, state health commissioner; **John L. Rice,** City Health Commissioner; **Arthur W. Booth,** Elmira, N. Y., Chairman of the Board of Trustees of the American Medical Association; **George Baehr,** of the New York Academy of Medicine; **Abel Wolman,** Baltimore, President of the American Public Health Association; **Louis I. Dublin,** Chairman of the Executive Committee on Medicine and Public Health for the fair, and **Homer Calver,** secretary of the museum and director of the fair's health exhibit.

Dr. Oscar B. Nugent has just returned from a month's vacation and has resumed his work at the Chicago Ear, Eye, Nose & Throat Clinic.

Correction

Through an inadvertence, in reviewing the scientific exhibits of the International Assembly of the International College of Surgeons held in New York May 21-23, no mention was made of the excellent motion picture exhibited by Dr. Morris C. Lippman of New York City entitled, "Nasal Plastic of a Humped and Elongated Nose with Bulbous Tip." The instructive exhibit consisted of lantern slides, photographs and transparencies, casts and moulages, and instruments and accessories. This made a well rounded and intriguing display of material on plastic surgery of the face and facial features. Technic, anesthesia, and postoperative results were included.

Plans for the **National Assembly** of the United States Chapter of the International College of Surgeons, to be held at Venice, Florida, February 12 and 13, 1940, are progressing very swiftly and favorably.

NOTICE: — THOSE INTENDING TO PARTICIPATE IN THE SCIENTIFIC PROGRAM AT THE NATIONAL MEETING OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS IN VENICE, FLORIDA, KINDLY COMMUNICATE PROMPTLY WITH DR. FREDERICK M. DOUGLASS, 421 MICHIGAN STREET, TOLEDO, OHIO, OR WITH DR. FRED H. ALBEE, 57 WEST 57TH STREET, NEW YORK CITY.

INVOLUTION OF THE LESSER CURVATURE OF THE STOMACH

AS A COMPLICATION OF CHRONIC GASTRIC ULCER*

Y. SEUDERLING, M.D., F.I.C.S.

AND

C. A. HERNBERG, L.M.

From the Department of Internal Medicine (Prof. W. Kerppola, M.D.) and from the Department of Radiology (Y. Seuderling, M.D.) of the Municipal Hospital "Kivelä".

HELSINKI, FINLAND

IN regard to the roentgen picture of the stomach, the organic hour-glass shape is a well known feature. A rare complication of chronic gastric ulcer is an extensive shortening of the lesser curvature in the longitudinal direction. Characteristic of these cases is an abnormally short or spiral-shaped lesser curvature; the cardia and pylorus are near each other, the latter being drawn upward and to the left, and the ventricular angle has disappeared. The greater curvature usually forms a large pouch. This type of stomach is often called "tobacco-pouch stomach." The duodenum is also involved in the ulcerative process. The extreme cases are called in the literature "fistula or pseudofistula gastroduodenalis." This term does not exactly express the pathologico-anatomic changes.

In the following section one case is reported, in which the stomach could be examined also by autopsy.

REPORT OF CASE

History. A man aged 71 was admitted to the hospital in February 1936 with the clinical diagnosis of myodegeneratio cordis, ulcus ventriculi and hypertrophia prostatae. Already at the age of 24 the patient sometimes had pain in the stomach immediately after meals and after eating sour food in general, also after physical exertion. There were long periods without such pain. The stools were usually solid, sometimes of tarry appearance. Once, at the age of 64, vomiting of blood occurred. During the last years there were symptoms of cardiac failure and difficult micturition.

The patient had always been thin and at the time of admission was emaciated and acrocyanotic. The heart was enlarged, and the sounds were dull. The blood pressure was 162/80 mm. of mercury. Pulmonary edema was present, and the liver was slightly enlarged. The prostate was enlarged, but there was no pain on palpation. The urine contained colon bacilli. The feces were normal. The red cell sedimentation rate was 22 mm. per hour. At the time of admission there were no symptoms of disturbance of the digestive tract. Gastric analysis after a test meal showed 30 cc. of poorly digested contents, a congo red reaction and an alkaline reaction.

Digitalis was given, whereupon the symptoms from the circulatory apparatus disappeared and the blood pressure decreased to 140/80 mm.

At Christmas of 1937 the patient complained of stomach trouble, consisting of attacks of pain, especially after ingestion of solid food. The food seemed to "come to a stop near the umbilicus." The same symptoms had occurred previously, but were not so pronounced. Gastric analysis showed an alkaline reaction for litmus.

Roentgen Examination. A large air bubble was seen in the stomach. The diaphragm seemed to be extended. The barium meal passed the cardia without any obstruction filling up the stomach, which was small. The distance between the cardia and the pylorus was about 2 cm. The pylorus was drawn upward and could not be separately seen. Stenosis was probably present, as indicated by the large air bubble. The duodenal cap was not visible. The shape of the stomach did not change in different positions, which was probably due to ad-

* Read at the International Scientific Assembly of the International College of Surgeons, New York, May 22, 1939.

hesions. The mucosal folds were low and small. The contour showed no defects which would indicate a tumor. There was no visible niche. Peristalsis was very weak and sluggish. Only small portions of the opaque meal trickled into the small intestine. After six hours most of the barium was in the stomach, and after twenty-four hours some residue remained. Elongation and adhesions of the colon sigmoideum were observed at the roentgen examination per rectum. The impression was shortening of the lesser curvature, as well as a spiral-shaped formation. The whole stomach was small. It was thught that the changes were

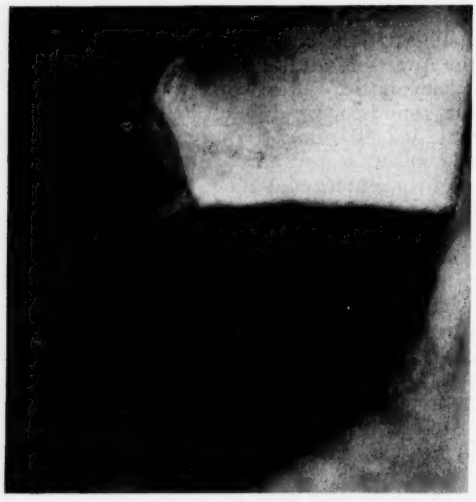

Fig. 1. Roentgenogram showing the small and shrunken stomach. The pylorus and cardia are near each other; the duodenal cap cannot be seen. The air bubble is very large.

probably due to a chronic gastric ulcer (fig. 1).

Course. The patient was given food rich in calories, but the gastric troubles continued, and the general condition changed for the worse. According to the patient's wish, he was operated on by Prof. H. Bardy, of the Maria Hospital.

Operation and Outcome. The operation revealed the following: The stomach was in an elevated position under the liver, immovable and strongly adherent to the surrounding organs. The adhesions were separated to such an extent that gastro-enterostomy could be performed. The wall of the stomach was scarred and brittle, and the stomach was consequently not closely examined, the operation being finished quickly. Gastro-enterostomy was done.

After the operatin the patient was in a state of collapse, and he died the following day.

Autopsy. All the organs were pale. The sigma anomaly was verified. The stomach was strongly adherent to the liver, peritoneum and diaphragm. Owing to the extent of rotation, the pylorus was directed downward and backward. There were no signs of peritonitis. The stomach was small, and was shrunken, especially in the lesser curvature; the distance between the cardia and the pylorus was 2.5 cm. In the lesser curvature the dorsad and ventrad cicatrization was so extensive that the stomach seemed

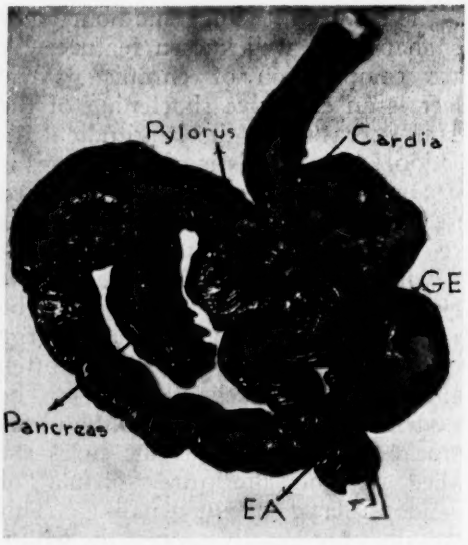

Fig. 2. Photograph illustrating the advanced cicatrization in the ventrad wall of the stomach. The short space between the cardia and the pylorus is clearly seen.

to be divided into two parts. No ulcer or macroscopically determinable tumor was seen (fig. 2).

A portion of the lesser curvature was taken for microscopic examination. This showed numerous cell islets in the muscular wall, in all probability indicating cancer. The examination was somewhat difficult, owing to the postmortem changes (Professor Wallgren).

Comment. It can be concluded that the patient suffered from a chronic disease of the stomach. The history extended over forty-seven years. The disease had probably proceeded as follows: In the beginning there was an

ulcerative process in the lesser curvature. The ulcer penetrated into the wall of the stomach. Perigastritic processes developed, and as a consequence formation of numerous adhesions to other organs occurred. Gradually the layers of the lesser curvature had been replaced by scar tissue, cicatrization had taken place, and a spiral-shaped involution had resulted. A pyloric stenosis developed simultaneously. All the aforementioned processes seemed to have been of long duration. The achylia was evoked by the atrophic mucosa. Malignant degeneration seemed to have occurred recently, but the exact time could not be determined. The clinical, roentgenologic and pathologico-anatomic findings corresponded with each other.

REVIEW OF THE LITERATURE

The cases which in the literature are called "fistula or pseudofistula gastroduodenalis" can be regarded as rare internal fistulas. Previously they were met with only at autopsy. In most of the cases the etiologic factor is a chronic gastric ulcer. Among other extraventricular factors may be mentioned tumors, adhesions and contracture of the omentum and advanced lesions of the gall organs.

From the older literature some cases may be cited. Dittrich[4] described a case in which, owing to a chronic gastric ulcer, the lesser curvature adhered to the duodenum and a perforation ensued in the resulting wall. The pylorus, situated at the border of the new opening, was normal. Mohr (1842)[13] reported an almost similar case.

In a case described by Cruveilhier (1852)[8] the stomach had the shape of an hour-glass; in the lesser curvature an ulcer was found, 8 cm. in length, which communicated with the pouchlike enlargement of the distal part of the stomach and through this with the small intestine.

Rokitansky (1861)[16] mentioned that an abnormal opening between the stomach and the duodenum may occur in connection with a chronic gastric ulcer. Also in many cases an ulcer is found in the duodenum near the pylorus. This process may be associated with the ulcer in the stomach in front of the pancreas but behind the pylorus. This can give rise to a new communication, and the pylorus can be excluded. Rokitansky seemed to presume the occurrence of two ulcers, one in the stomach, the other in the duodenum near the pylorus. This fact should explain the scarcity of these cases.

Thierfelder (1868)[19] reported a case in a woman aged 46. As a condition for the development of this abnormal communication he mentioned the following: The lesser curvature usually forms an angle. In some patients this angle may be so small that both parts of the curvature come near to each other. When an ulcer ensues, the aforementioned small angle and the short space between the two parts of the curvature are circumstances favorable for an adhesion of these parts. When the ulcerous process with its accompanying changes develops further, a partition wall in the stomach may occur in a later phase. Perforation can take place in this wall between the corpus and the canalis, or, provided the duodenum is involved in the process, between this organ and the stomach. The fistula appears in an advanced stage. During the course of the disease a large part of the musculature is either weakened or destroyed, in consequence whereof the stomach lacks its normal peristalsis. The distal part of the stomach is pouchlike and enlarged, partly by reason of the circumstances just mentioned and partly owing to mechanical factors such as the weight of ingesta or to stenosis. Welch (1885)[20] wrote about this feature in two cases.

It may be briefly said that almost all the authors suppose that the pathologic changes develop along the lines just described.

When the roentgen examination of the gastro-intestinal tract had reached a certain degree of development, cases of this type were observed by some authors. Already in 1909 Schmieden and Härtel[17] mentioned the unusual shape of the lesser curvature. As has already been said, the term "fistula" is not exact, but it has been used in the course of time to indicate conditions of the aforementioned type.

Lüdin (1924)[11] described a case of spontaneous gastro-enterostomy in a woman aged 61. Roentgen examination revealed a pouchlike enlargement of the stomach; the lesser curvature was rolled in, the pylorus was drawn toward the cardia, and a forty-eight hour residue was apparent. Numerous scars in the ventrad wall and the lesser curvature were seen at the operation. The prepyloric portion was adherent to the duodenum. Above the pylorus a new, abnormal opening from the stomach into the duodenum had formed. This opening was situated in the scar tissue and was regarded as a spontaneous perforation of an ulcer into the small intestine.

Monroe (1926)[15] mentioned a case in which a woman aged 52 had suffered many years from gastric disturbances. She was operated on in 1917, and the condition was regarded as an inoperable carcinoma. In 1919 the stomach was hour glass-shaped at the roentgen examination. Gastro-enterostomy was performed. The patient remained free from symptoms until 1926, when at roentgen examination some of the barium meal passed directly into the duodenum, a part of it filling up the pouchlike enlargement of the stomach and proceeding into the small intestine through the gastro-enterostomy opening. The case is remarkable; the fistula ensued in spite of the operation.

Löw-Beer (1931)[10] reported a case in which a distinct niche could be seen in the lesser curvature and also a spiral-shaped rolling in of the curvature. The lower part was enlarged, the mucosal relief changed. The pylorus and the duodenal cap could not be seen. He also described the case of Haudek[7] in which examination showed a fistulous communication from the lesser curvature to the duodenal cap. The pylorus was distinctly seen, and the lesser curvature seemed not to be shortened. Löw-Beer agreed with Lüdin[11] and said that this shape of the stomach may be regarded as an expression of spontaneous gastro-enterostomy. Melchart (1931)[12] was of the same opinion and reported two cases. In one a partition wall 15 cm. long could be seen. The pylorus and the duodenal cap could not be differentiated. The other case was almost similar, but no partition wall was seen. The first case resembles those mentioned by Dittrich,[4] Thierfelder[19] and Lüdin.[11]

In a case reported by Le Noir and his collaborators (1926)[9] the opaque meal passed from the fornix directly into the small intestine. The possibility of spontaneous gastro-enterostomy due to a chronic ulcer was apparent. At the operation it was observed that a large ulcer in connection with perigastritic processes had caused a shrinking of the stomach, shortening of the lesser curvature and an abnormal opening into the duodenum.

Moiroud (1935)[14] examined a woman aged 81. The stomach was drawn up to the left. The lesser curvature was much shrunken, measuring 3 by 5 cm., with a dorsad opening, through which the barium meal passed into the duodenum on the oral side of the flexura duodenojejunalis. Microscopically no malignant changes were observable. The localization of the fistula is rare, and the case was regarded as one of spontaneous gastro-enterostomy.

In some cases the development of the pathologic process could be followed from the time of appearance of an ulcer to the stage of the fistula. Hautefeille (1929)[8] observed a niche in the lesser curvature of the stomach in a man aged 50. One year later, a diverticulum-like

pouch appeared in the same place. The opaque meal passed directly from this pouch into the upper portion of the duodenum. Operation was not performed, but the patient remained under observation for two years, and the stomach was unchanged at four roentgen examinations.

Dyes (1934)[5] reported a case in which a niche was seen in the lesser curvature near the pylorus. Four years later the niche had disappeared and the pylorus was involved in the spiral-like rolling in of the curvature.

In the case of Frank (1938)[6] the patient had suffered from gastric disturbances since 1918. Five years later he had a hematemesis, and one year from this time a gastric ulcer was found. Hematemesis occurred again in 1928. At roentgen examination in 1930 a filling defect in the lesser curvature was seen, and carcinoma was suspected. The patient was examined again in 1934 and 1936; at the last examination the stomach had the shape usually found in cases of so-called gastroduodenal fistulas.

In most of the cases the history of the disease extended over many years. In the case reported by Lüdin[11] this time was thirty-eight years; Melchart[12] mentioned twenty-seven years and Frank[6] thirteen years, the period being forty-seven years in our case. Nothing can be said with certainty about the time elapsing from the beginning of the ulcerative process to the formation of the fistula. In some cases the development seems to take place in a short time. In the case reported by Hautefeille[8] the time was one year, after which the stomach remained unchanged for two years. According to Dyes,[5] the time was four years, and in Frank's[6] case it was thirteen years. Monroe[15] mentioned nine years, but his patient was operated on twice.

ETIOLOGY

Although the aforementioned extraventricular etiologic factors and in some cases a spastic contracture of the lesser curvature may be considered as the cause of the herein mentioned changes in the stomach, it is apparent that a chronic, mostly neglected gastric ulcer is the main cause of the disease. During the development of the process the lesser curvature slowly diminishes; the muscular layers are affected and finally destroyed and replaced by scar tissue. The ulcer itself, however, is not enlarged. Inflammatory processes may involve the serosa and later the omentum also. The latter and the ligamentum hepatoduodenale shorten gradually. In many cases adhesions to the liver and diaphragm ensue. Because of the shortening of the lesser curvature, the pylorus is drawn up toward the cardia, and the curvature at the same time becomes straighter. The canalis is directed upward and in some cases to the left. The whole stomach is situated to the left of the midline. The duodenal cap is also affected and drawn into the process, and in later phases it cannot be distinguished separately in the roentgen picture. The upper part of the duodenum is drawn toward the pylorus, and the arch in the first portion disappears. Owing to the formation of scar tissue in the different portions, these become rigid, and the normal peristalsis ceases. The primary ulcer may disappear or be deformed to such an extent that it is impossible to determine its position in a later phase. In some cases both portions of the lesser curvature are joined and form a partition wall in the stomachic picture. This wall may be the site of a later perforation.

The localization of the fistula and the extension of the processes vary, but usually the first portion of the duodenum is the site of the ensuing fistula; Hautefeille[8] mentioned the second portion and Moiroud[14] the third.

The greater curvature enlarges in the course of the disease. This is probably due to the increased work of the stomach and to changes in the stomachic wall. Purely mechanical factors may be of importance also; e. g., the contents remain a long time in the stomach, causing dilatation. A valve formation in the pyloric region or a rotation may occur. Sometimes the whole stomach may be shrunken, as in our case.

Fig. 3. A cascade stomach of an appearance usually found in cases of gastroduodenal fistula. The upper part of the corpus ventriculi is enlarged and forms a "tobacco pouch." The canalis is visible.

ROENTGEN DIAGNOSIS

The roentgen picture may, of course, vary considerably. Typical "tobacco-pouch" stomach with an enlarged greater curvature is the usual appearance. The passage of the opaque meal depends on the pathologic changes and the facilities for evacuation.

In roentgen examination a so-called cascade stomach must be considered. This is illustrated by figure 3, which first gives the impression of a gastroduodenal fistula, but at examination in other positions it is evident that one is dealing with a cascade stomach, as seen in the figure 4, where the distal part of the canalis, the pylorus and the duodenal cap are visible.

A contracture of the canalis should also be kept in mind (Haudek).[7] This is often of a spastic nature and can be made to disappear by suitable medication. It is also difficult to decide whether a malignant degeneration is present.

Fig. 4. Same case as illustrated in figure 3. When the patient lies on his back the lower part of the corpus ventriculi comes near the cardia. The canalis extends from this portion; the mucosal folds are clearly seen. The pylorus and the duodenal cap are seen to the left, in front of the vertebral column. The upper part of the corpus ventriculi forms the enlarged portion of the stomach, below the canalis.

Only a few cases in which the condition was diagnosed by roentgenologic examination are reported in the literature. Monroe[15] observed one case in 28,000 examined stomachs. Frank (1938)[6] reported a total of sixteen cases of true or pseudogastroduodenal fistula recognized by roentgen examination.

SUMMARY

A case of involution of the lesser curvature of the stomach in a man aged

71 is described, in which the history extended over forty-seven years. The patient was operated on, but died. Post mortem the stomach was seen to be small. Extensive scar tissue divided it into two parts. Macroscopically no tumor was visible. In a specimen from the lesser curvature malignant degeneration in some cells could be seen.

Cases from the older literature and from the literature relating to roentgen findings are cited. The etiology is usually a chronic gastric ulcer. Advanced cases of this type seem to be rare.

We take pleasure in thanking Prof. Dr. H. Bardy, Physician-in-Chief at the Maria Hospital, Helsinki, for his assistance. Further thanks are due to Prof. A. Wallgren for his help in examining the microscopic preparations and for giving us valuable advice.

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RÉSUMÉ

Involution de la petite courbure de l'estomac consécutif à un ulcére gastrique chronique

Le malade âgé de soixante-et-onze ans avait souffert de troubles gastriques pendant les dernières quarante-sept années. Il fut opéré, mais ne survécut pas à l'opération. A l'autopsie, on trouva un petit estomac divisé en deux compartiments par du tissu cicatriciel. Macroscopiquement, aucune tumeur n'était visible. Dans un specimen prélevé de la petite courbure, on constata de la dégénération maligne de quelques cellules.

L'auteur cite des cas recueilles dans la littérature. L'étiologie est généralement un ulcère gastrique chronique. Les cas avancés de cette nature sont peu fréquents.

ZUSAMMENFASSUNG

Involution der kleinen Curvatur des Magens als Komplikation eines chronischen Magengeschwürs

Ein Fall von Involution der kleinen Kurvatur des Magens bei einem 71 Jahre alten Mann wird beschrieben, bei dem das Leiden sich über einem Zeitraum von 47 Jahren erstreckt. Der Patient wurde operiert und starb. Die Autopsie ergab einen kleinen Magen. Ausgedehntes Narbengewebe teilte ihn in 2 Teile Makroskopisch war kein Tumor nachweisbar. In einem Schnitt der kleinen Curvatur konnte bösartige

Degeneration in einigen Zellen nachgewiesen werden.

Fälle aus der älteren Litteratur und aus der Litteratur, die auf die Röntgenbefunde Bezug nimmt werden angeführt. Ätiologie ist gewöhnlich ein chronische Magengeschwür Fortgeschrittene Fälle dieses Typs scheinen selten zu sein.

SUMARIO

Involutión de la Curvatura Menor del Estómago Complicando una Ulcera Gastrica Cronica

Un caso de involución de la curvatura menor del estómago en un hombre de 71 años de edad es descrito, en el cual la historia se extiende desde cuarenta y siete años. El enfermo fué operado pero murió. En la autopsia el estómago parecia ser pequeño. Tejido cicatricial extensivo lo dividia en dos partes. Macroscopicamente ningun tumor fué visible. En un corte de la curvatura menor degeneración maligna fué encontrada.

Casos en la literatura antigua y en la literatura describiendo examenes roentgeneológicos son mencionados. La etiología es generalmente una úlcera gástrica crónica. Casos avanzados de éste tipo parecen ser raros.

RIASSUNTO

Involuzione della piccola curvatura dello stomaco secondaria a ulcera gastrica cronica

Un paziente di 71 anni e sofferente da 47 anni di disturbi gastrici fu operato con esito infausto. Al autopsia fu trovato uno stomaco piccolo, diviso in due parti da una eccessiva forma cicatriziale. Macroscopicamente, nessun tumore fu rilevabile. L'esame microscopico di una porzione della piccola curvatura dello stomaco, mostrò degenerazione maligna in qualche cellula. L'autore cita dei casi raccolti nella letteratura. Il fattore etiologico è usualmente una ulcera gastrica cronica. Casi avanzati di questo tipo sono rari.

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An **Institute for the Consideration of the Blood and Blood-forming Organs** was held by the Medical School of the University of Wisconsin on September 4, 5 and 6. The Wisconsin Alumni Research Foundation has made available the necessary funds to finance this institute. Among those who took part were **Dr. L. J. Witts,** professor of chemical medicine at the University of Oxford, and **Dr. E. Meulengracht,** professor of chemical medicine at Copenhagen. The subjects discussed included various forms of anemia and the therapy of anemia; the etiology and therapy of granulocytopenia; the formation of hemoglobin; hemorrhagic diseases; leukemia; diseases affecting lymph nodes.

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Dr. Richard Leonardo, of Rochester, New York, has just returned from a visit to Europe.

HORMONOTHERAPY IN MASTOSIS

PROF. DR. EDUARDO BELLO

LIMA, PERU

DURING the period of sexual activity or at the menopause certain benign changes in the mammary gland are prone to take place. These changes are in the nature of tumors, varying from simple indurations to cystic formations (degenerations) and are not malignant, although if left untreated they may progress to malignancy.

It was formerly my practice to remove these growths surgically, but recently I have learned to associate them with certain menstrual changes, for in all instances an accompanying imbalance of ovarian hormone secretion[1, 2, 3] has been observed. I first began the practical application of hormonotherapy in breast hyperplasias in 1936, employing it in the case of a patient who would not consent to operation.

CASE REPORT

This patient, aged 50, had had two normal pregnancies followed by two abortions, the last when 40 years of age. Her menses began diminishing at 44 and ceased at 48. Her ensuing menopause was decidedly tumultuous, being accompanied by headaches, palpitations and hot flashes. Six months before coming to me she first noticed a painful swelling in her left breast which was slowly increasing in size. Upon inspection this breast appeared somewhat enlarged, and upon palpation the upper border felt indurated and was tender to pressure. There was no discharge from the nipple, which was not retracted, and no axillary adenopathy was present. The right breast was of normal size and shape but careful palpation disclosed the presence of three small hard masses, all definitely encapsulated and freely movable.

Bearing in mind the fact that such hyperplasias often remain stationary or even undergo retrogression, I refrained from insisting upon surgical intervention. The changes in the right breast gave further reason for conservative treatment of the left one. However, it was decided to use hormonotherapy, since certain European clinics had reported excellent results from its use in such hyperplasias associated with functional ovarian disturbance. The patient was given ovarian extract orally and estrogenic hormone (Progynon) by intramuscular injection. She was advised to avoid pressure or traumatism of her breasts and to return at intervals for observation. Upon her first return, at the end of two weeks, the nodules had disappeared from her right breast while the swelling of the left breast had decreased to half its previous size. With continued treatment there remained at the end of two months little evidence of any induration, and at the end of eight months both breasts apparently were quite normal.

OTHER CASES

The foregoing history is typical of two succeeding cases, and the excellent results achieved inspired their presentation before the medical society of Lima in 1937.[3] Since then the number of patients has increased to twenty, of which four have not been considered because they discontinued treatment at the first sign of relief and were not seen again. In two cases the hyperplasia was complicated by an active inflammation of the overlying skin, but these patients, nevertheless, responded well to the treatment. Although this list of cases is not long, the uniformly good results prompt their reporting.

TREATMENT

The tumors treated had all the characteristics of benignity without nipple retraction, skin adhesions or axillary adenopathy. In most cases the opposite breast contained painful nodules which disappeared later under treatment. All the patients were in or near the menopause and it was assumed that they lacked estrogenic hormone. This hormone, therefore, was given, in the first

case orally, and subsequently Progynon and later Theelin by intramuscular injection. In menstruating patients 10,000 I. U. were injected 15 days after menstruation, followed after 48 hours by 20,000 I. U. and after 72 hours by 30,000 I. U. The same dosage was used with patients in their menopause, the injections being started at once and repeated at thirty-day intervals. As a result of the treatment, periods usually returned to normal with menstruating patients, while with the patients in the menopause the periods tended to reappear temporarily.

BIOLOGICAL FACTORS

That there is a definite biological foundation for hormonotherapy seems very reasonable. Beginning with puberty the galactophorous ducts, immediately before the onset of the menses, undergo hyperemic changes followed by epithelial proliferation or hyperplasia, and the terminal ducts are incited to the formation of new glandular acini.[3] This same phenomenon occurs in adults and as late as the menopause, but it then is transitory rather than formative. When ensuing atrophy does not take place, an induration or hyperplasia remains. Hyperplasia and cyst formation in the young are associated with ovarian dysfunction and irregular menstruation, but in the senile they are seen as a prolongation or intensification of cell growth.

Experience and clinical study assist in explaining the influence of ovarian hormones in inciting breast hyperplasias. Such hyperplasias are transitory if the patient has an endocrine imbalance and alternate between progression and retrogression. When the dysfunction is prolonged into the menopause, hyperplasias are especially likely to result. With the menopause no more follicles mature and no estrogenic hormone is secreted, but possibly some lutein may remain active in many cases, and it is to this hormone, in predisposed individuals, that persistence and progression of hyperplasias are attributed, with occasional evolution to malignancy. This last occurrence has been denied by many observers but without conclusive proof.

CANCER FORMATION

According to R. Muir,[5] of Edinburgh, it is impossible to diagnose beginning malignancy in breast tumors. He considers that modern advances have been limited to the establishment of certain relations and exciting causes of hyperplasias, whether benign or malignant. Certain carcinogenic substances, such as tar, a virus of unknown origin or a hitherto unknown hormonic deficiency or aberation, may be at the root of the metamorphosis. Malignancy is established slowly in certain groups of cells and takes on the character of a local rebelion with the formation of atypical elements which invade, alter and destroy the association of vital units constituting the individual organism. Recent observers explain cancer formation as a chronic irritation which causes a chronic lymphangitis and this, in turn, by isolating certain cells, suppresses their relation to the organism and prevents the influence on its vital activities of hormones, regulators or equalizing substances whose function is to maintain the harmony of cellular growth.

EFFICACY OF TREATMENT

In the United States the efficacy of hormone therapy in breast hyperplasias has been studied and discussed, notably by Dean Lewis and Geschickter.[6] Recent numerous reports from various medical centers have corroborated the effectiveness of the estrogenic hormone in hyperplasias of the breast. One clinician advised supplementary treatment with thyroidin, assuming a deficiency in thyroid secretion to be a factor in such hyperplasias.

SUMMARY

1. The estrogenic hormone causes retrogression of hyperplasias appearing in the menopause if associated with menstrual irregularity.

2. Hormonotherapy should be employed only after possible malignancy has been ruled out by careful clinical study.

3. For complete retrogression of such hyperplasias three to eight months may be required.

4. Such therapy not only does not stimulate cells to become malignant but probably prevents such hyperplasias from becoming malignant.

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RÉSUMÉ

La thérapie hormonique dans la Mastose

1. L'hormone estrogénique entraîne la rétrogression de l'hyperplasie apparaissant à la menopause; elle est accompgnée d'irrégularités menstruelles.

2. La thérapie hormonique ne doit être employée qu'après exclusion absolue de toute néoplasie maligne.

3. La retrogression complète de ces hyperplasies nécessite parfois un traitement d'une durée de trois à huit mois.

4. Ce traitement a une action bienfaissante sur les cellules et probablement empêche ces hyperplasies de devenir malignes.

ZUSAMMENFASSUNG

Die Hormonentherapie in Mastosis

1. Das estrogene Hormon verursacht eine Zurückbildung der in der Menopause erscheinenden Hyperplasien wenn sie mit menstrueller Unregelmässigkeit verbunden sind.

2. Die Hormonentherapie darf nur verwendet werden, wenn die Möglichkeit eines bösartigen Gewächses durch Klinische Untersuchungen augeschlossen wurde.

3. Um eine komplette Zurückbildung solcher Hyperplasien zu erzielen sind 3-8 Monate erforderlich. Diese Therapie stimuliert die Zelle nicht zur Malignität vielmehr verhindert sogar dass die Hyperplasien bösartig werden.

SUMARIO

Hormonoterapia en la Mastósis

1. La hormona extrogénica causa retrogresión de la hiperplasia apareciendo en la menopausia si está asociada con la irregularidad menstrual.

2. La hormonoterapia debe de ser empleada solamente despues de haber eliminado la posibilidad de malignidad por cuidadosos estudios clínicos.

3. Para retrogreción completa de tales hiperplacia de tres á ocho meses seran requeridos.

4. Tal terapia no solamente estimúla á las células á volverse malignas sino que probablemente previene tales hiperplásia á transformarse en malignas.

RIASSUNTO

Ormonoterapia nella Mastosi

1. L'ormone estrogenico produce una retrogressione dell'iperplasia che appare nella menopausa, se associata con irregolarità mestruale.

2. L'ormonoterapia deve essere usata solamente quando un dilgente

esame clinico abbia escluso la possibilità di tumore maligno.

3. Per la completa retrogressione di tale iperplasia, un periodo di 3 a 8 mesi, è necessario.

4. Questa terapia non ha azione maligna sulle cellule, ma probabilmente previene che tali iperplasie divengano maligne.

Italian Physicians Appointed as Senators

The following physicians have been named senators of Italy by the King, upon the recommendation of the Duke: Prof. Cesare Agostini, born Oct. 16, 1864, a specialist in nervous and mental diseases, president of the Faculty of Medicine of the University of Perugia; Prof. Roberto Alessandri, born Dec. 1, 1867, director of clinical surgery of the University of Rome and president of the Royal Medical Academy of Rome; Prof. Giulio Alessandrini, author of the only Italian book on parasitology, whose work in this field was responsible for the establishment of an official chair, which he holds; Prof. Lorenzo Bardelli, born June 30, 1869, head of the department of ophthalmology and president of the Faculty of Medicine of the University of Florence; Prof. Giuseppe Bastianelli, director of the Institute of Malaria (Ettore Marchiafava) and head of the department of semeiotic medicine at the University of Rome; Prof. Arturo Beretta, born in 1876, director of the odontology clinic and of the School of Odontologic and Prosthetic Dentistry and president of the International Stomatology Association; Prof. Aristide Busi, born in Bologna July 21, 1874, head of the department of radiology of the University of Rome; Prof. Luigi D'Amato, born in 1874, director of the department of clinical medicine at the University of Naples; Prof. Giovanni Masnata, born March 27, 1870, doctor of operative medicine and director of the Civil Hospital of Stradella, Sansepolcrista; Prof. Cesare Micheli, born in Spoleto May 17, 1866, obstetrician and gynecologist, chief obstetrician of the Hospital of Rome and director of the Maternity Hospital of St. Giovanni from 1910 to 1935; and Prof. Alberto Pepere, born July 5, 1878, professor of pathologic and histologic anatomy, and founder of the School of Pathologic Anatomy, at the University of Milan.

Victor E. Levine, professor of biological chemistry and nutrition at the School of Medicine of Creighton University, is continuing medical and biological studies of the Eskimo under the auspices of the U. S. Public Health Service. His base is Kotzebue, north of the Arctic Circle. This is his fifth trip to the Arctic.

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At the annual meeting of the Minnesota State Medical Association it was voted to present the distinguished service medal and scroll, awarded to members for special contributions to the work of the association, to the late **Drs. William J. Mayo** and **Charles H. Mayo**. Photographs of these two doctors will be hung in the Medical School of the University of Minnesota.

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Dr. Ernst Ruska was awarded the prize of the Senckenberg Foundation for his work with the electron microscope. The prize, which has the value of about 4,000 marks, is awarded every three years to a German investigator for contributions to the advancement of medicine or science and was established one hundred and seventy-five years ago. It was presented at this time on the occasion of the twenty-fifth anniversary of the university at Frankfurt-am-Main.

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Dr. Laignel-Lavastine, professor of the history of medicine at the University of Paris, has been elected president of the International Society of the History of Medicine.

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Dr. Duncan Graham, of Toronto, was chosen president-elect of the Canadian Medical Association at the recent meeting in Montreal; Dr. Frank S. Patch, of Montreal, was installed as president. Next year's meeting will be in Toronto.

BONE TRANSPLANTATION IN DISEASES OF THE OSSEOUS SYSTEM*

DR. A. FAHRI AREL, F.I.C.S.

Privat Docent of Surgery, University of Istanbul

ISTANBUL, TURKEY

THE modern surgeon makes extensive use of bone transplantation with satisfactory results in the diseases of the osseous system. Surgeons can repair with graft the great loss of bone resulting either from removal of malignant growths or from necrosis due to osteomyelitis. Its service in the treatment of pseudo-arthrosis is well known. The result of bone transplantations is much improved since we are using autogenous bone graft. However, the late experiences with os purum are worthy of consideration. The figures illustrate two cases of bone transplantation.

Fig. 1. Sarcoma in the region of the condyles of the femur (case 1).

REPORT OF CASES

CASE 1. In the case of a young man of 23 years old a roentgenogram (fig. 1) showed without doubt a malignant growth at the

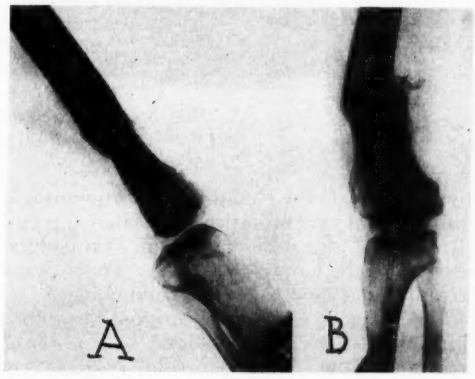


Fig. 2. Roentgen appearance of the bone graft ten months after implantation (case 1). A, lateral view. B, dorsoventral exposure.

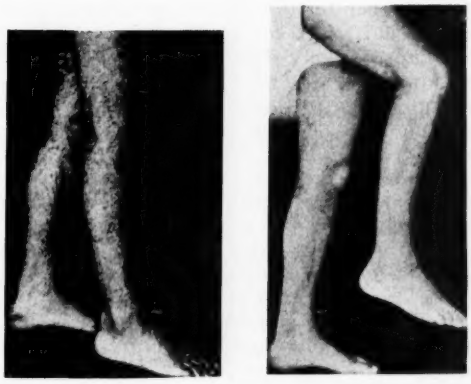


Fig. 3. Degree of motion in the knee joint ten months after operation (case 1).

* Read at the International Scientific Assembly of the International College of Surgeons, New York, May 23, 1939.

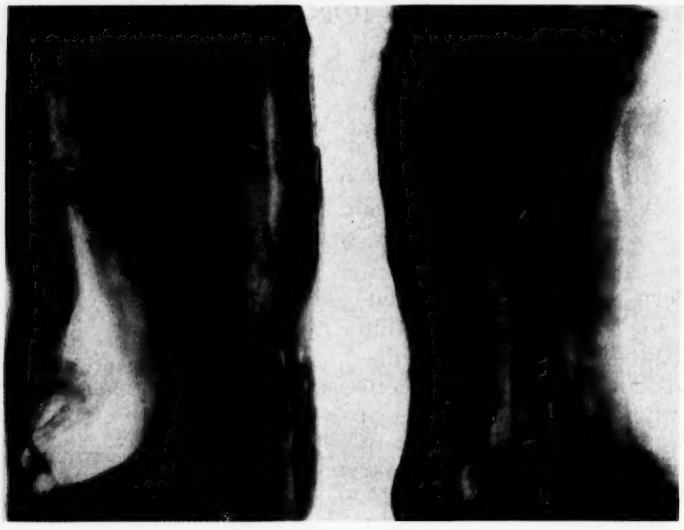


Fig. 4. Roentgenogram showing implantation of bone (case 2, first stage of operation).

lower end of the femur. Roentgenologic and clinical examination revealed no infiltration of the nerves and the main blood vessels of the popliteal space. There were no pulmonary or glandular metastases.

The patient refused the proposed amputation. Thus we were obliged to employ a less radical surgical operation, resection of the tumor followed by a plastic bone graft replacement. The patient was operated on by Dr. Rudolf Nissen, the Chief Surgeon of the Clinic.

After removal of the tumor, a large part of the upper third of the tibia was resected in the sagittal direction; the joint cartilage and capsule were not removed. The graft was implanted so that its lower end came in connection by mortise with the shaft of the femur. The leg was immobilized in a plaster cast. The pathologic report was chondrofibrosarcoma. Solid bony union occurred after four months. A roentgenogram taken ten months after the operation (fig. 2) showed excellent bony union. One can see the osseous rearrangement process in the graft. Some flexion of the knee is possible (fig. 3). There is a small degree of lateral instability, which has been corrected by a brace.

Comment. I shall not discuss the value of the most radical amputation and the less radical resection. Dr. Albee reported in 1936 thirteen cases of resection of malignant growths of the bone, in which the results were good. In our case, the opposition of the patient to amputation obliged us to perform a less radical procedure, but also with satisfactory results.

CASE 2. A boy aged 9 years had acute osteomyelitis for about three years. He walked painfully with a large brace extending to the hip and with a cane. A roentgenogram showed the loss of the whole shaft of the tibia. A large skin scar and a shortening of 14 cm. were present. There were no signs of infection.

In this case I made the transplantation of the fibula of the same side, in two stages. Hahn first published this operation.

In the first stage, I resected the upper part of the fibula just below the head of the bone and implanted it in the upper epiphysis of the tibia through the same incision (fig. 4). The leg was put in a plaster cast. About three months after the operation, the bony union was perfect (fig. 5). In the second stage, I resected the lower part above the malleolus and implanted it in the lower epiphysis of the tibia, through the same incision (fig. 6). The leg was again placed in a plaster cast. In three months the bony union was perfect.

Figure 7 shows the growth of the graft. Two years after operation the thickness of

Fig. 5. Roentgenogram showing bony union following implantation (case 2).

Fig. 6. Roentgenogram showing resection of bone (case 2, second stage of operation).

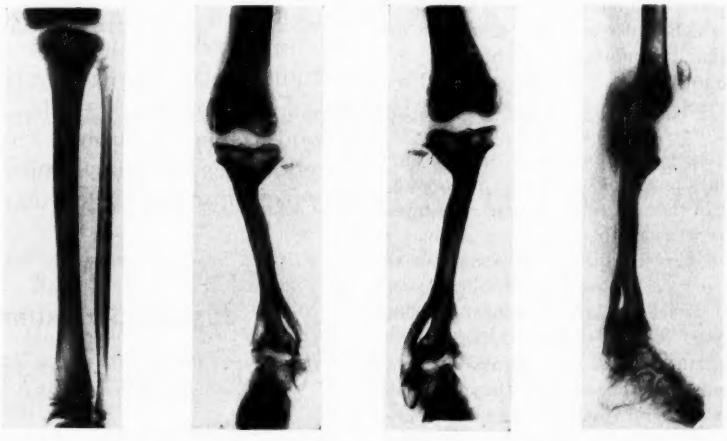


Fig. 7. Roentgenogram showing growth of the graft two years after operation (case 2).

the bone graft is almost the same as the thickness of the bone on the other side. Note the development of the malleolus.

The boy can walk without a brace or cane. He wears an orthopedic boot to compensate for the shortening.

Comment. I think that the operation in two stages is preferable to that in one stage. Perhaps many failures due to necrosis of the graft or graft fracture would be avoided by the two stage procedure.

SUMMARY

The advantages of bone transplantation in diseases of the osseous system are stressed. Two cases are reported in which bone grafts gave good results, one a case of a malignant growth of the femur, the other a case of acute osteo-

myelitis affecting the tibia. In the second case, resection and grafting were done in two stages, and the author prefers the two stage operation.

DISCUSSION

Dr. Fred H. Albee, New York: Up to recently, the attitude has been as follows: For those conditions that are ostensibly benign the curet has been used—a most inadequate instrument. This has been resorted to particularly in cases of giant cell tumors. If there is any malignant tendency at all, these tumors recur, and then the curet is still being used. I have had a number of patients come to me on whom the curet had been used, even after recurrences of tumor.

The other surgical procedure is amputation. As a general scheme of treatment in bone malignancies, I feel that the profession should be mindful of an operation such as the one that has just been so beautifully demonstrated—resection of the shaft and the tumor and immediate replacement by bone.

In analyzing and comparing my series of cases with cases in which I had previously done amputation, I find that the mortality or the safety of the patient as to life is about the same. Now I feel that the resection will be used eventually, when we get more experience. When the necessity of early resection is impressed on the surgical profession, there will be a lower percentage of mortality than that obtained in cases of amputation, for the reason that one can induce a patient to have a resection but it is difficult to persuade him to have an immediate amputation. All patients, or at least a large number of them, will resist amputation. They come to the surgeon when the malignant process is in its early stages. One recommends amputation, and they will not have it. They have x-rays made, causing delay, which adds to the ultimate mortality—through either extensive local involvement or catastrophe. I advise against x-rays and recommend that one proceed to the operation. X-rays can be used after the operation, but cautiously before, because of the devitalizing effect on the tissues. It is a discouraging and tragic experience for a surgeon to have a patient brought to him with these malignant processes and find that the tissues have been so devitalized by excessive x-ray exposure that his hand is absolutely stopped. He can do nothing, and it is no use to attempt surgery in these cases. I would sound a word of warning against the over-use of x-ray therapy in such cases. Of course, if the case is desperate, one can resort to the x-rays afterward, but there is danger of over-use.

It has been surprising to me how successful surgeons are in resecting tumors of considerable duration and tumors that have been subjected to x-rays. A protective membrane seems to establish itself immediately outside the tumor, between the soft parts and the important structures, such as nerves and blood vessels.

I think I may say that the surgeon will, in many cases, surprise himself by being able to remove all of the malignant growth and still leave important structures intact. That is very encouraging.

RÉSUMÉ

Les greffes osseuses dans les maladies du système osseux

Les greffes osseuses presentent de grands avantages dans les maladies du squelette. L'auteur rapporte deux cas qui lui ont donné deux succès: un cas de tumeur maligne du femur et un autre cas d'ostéomyélite du tibia. Dans le second cas, la resection et l'implantation furent faites en deux temps. L'auteur préfère l'intervention en deux temps.

ZUSAMMENFASSUNG

Knochen Transplantation bei Krankheiten des Knochenssystems

Die Vorteileder Knochentransplantation bei Erkrankunken des Knochensystems werden betont. Zwei Fälle werden berichtet, bei denen Knochenpfropfungen gute Resultate gaben, 1 Fall einer bösartigen Geschwulst des Oberschenkels, der andere ein Fall von akuter Osteomyelitis der Tibia. Im zweiten Falle wurde Resektion und Propfung zweiseitig ausgeführt, und der Autor bevorzugt die zweiseitige Operation.

SUMARIO

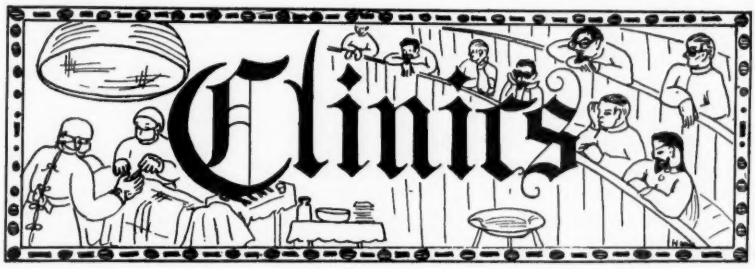
Transplantación de Hueso en Enfermedades del Sistema Oseo

Mucha importancia se le da á las grandes ventajas que se obtienen en transplantación de hueso en las enfermedades del sistema oseo. Dos casos han sido reportados donde el injerto de hueso han dado magnificos resultados. Uno fué un caso de un tumor maligno del femur, el otro fué un caso de osteomielitis aguda que afectaba la tibia. En el segundo caso resección y injerto fueron hechos en dos tiempos, y el autor prefiere la operacion de dos tiempos.

RIASSUNTO

Innesti ossei nelle malattie del sistema osseo

Nelle malattie del sistema osseo, gli innesti ossei hanno un gran valore terapeutico. In un caso di tumore maligno del femore, e in uno di osteomelite acuta dello tibia, l'autore ha riportato esito felice. In quest'ultimo caso, la resezione e l'innesto furono eseguiti in due tempi. L'autore preferisce l'operazioni in due tempi.



NEW MEXICO POSTGRADUATE STUDY GUILD

Fellows and Members of the United States Chapter of the International College of Surgeons residing in New Mexico met at the home of Dr. William Randolph Lovelace of Albuquerque, New Mexico, at a dinner meeting on the evening of August 30, 1939, and completed the formation of the Postgraduate Study Guild of New Mexico, according to the by-laws of the United States Chapter of the International College of Surgeons.

Dr. Lovelace was elected president of the Guild and Dr. Donat F. Monaco, of Gallup, New Mexico, was elected secretary and treasurer.

The meeting was a majestic one and plans were made for the first scientific meeting of this Guild to be held within the next month or two, subject to the call of President Lovelace, under whose auspices the meeting will be conducted. Detailed plans are being worked out.

All Fellows and Members residing in New Mexico were present with the exception of Dr. Hugh V. Fall of Rosewell, who found it impossible to participate.

Details of the formation of the Guild and of the rules and regulations for its conduct were explained by Dr. Charles H. Arnold of Lincoln, Nebraska, secretary of the Scientific Assembly of the United States Chapter of the College.

COMPLICATIONS OF RHINOPLASTIC SURGERY

MORTIMER M. KOPP, M.D.

NEW YORK

THE reports of plastic surgeons today tend to emphasize the wonders of their field, while appallingly little has been stated about the complications encountered during and after operation, especially in rhinoplastic surgery. A greater number of patients is being faced with a greater number of complications than ever before.

CLASSIFICATION

Complications following rhinoplasty may range all the way from a minor infection to death. Palmer[1] classifies these possible complications as follows:

1. *Infections:*

   (*a*) Cellulitis
   (*b*) Abscess
   (*c*) Sinusitis
   (*d*) Pharyngitis
   (*e*) Tonsillitis
   (*f*) Pyelitis
   (*g*) Arthritis
   (h) Flare-up of Chronic Tuberculosis
   (*i*) Parotitis
   (*j*) Thrombophlebitis
   (*k*) Septicemia
   (*l*) Pulmonary Complications of Infectious Origin: bronchitis, bronchopneumonia, infarction, embolism, pleurisy, pulmonary abscess, empyema and atelectasis.

To this group I shall add:

   (*m*) Acute otitis media, and
   (*n*) Meningitis.

Continuing Palmer's classification:

II. *Structural or Mechanical Complications:*

   (*a*) Narrowing of the nares
   (*b*) Loss of sense of smell
   (*c*) Difficulty in breathing
   (*d*) Interference with normal respiratory functions of the nose by damage to the mucous membrane
   (*e*) Cosmetic defects due to faulty technic, such as cutting through cartilage of the columella.

To this group may be added:

   (*f*) Exostosis, and
   (*g*) Sloughing of the skin of the nose.

Again resuming Palmer's classification of complications:

III. *Circulatory Complications:*

   (*a*) Hemorrhage
   (*b*) Shock
   (*c*) Induration of wounds
   (*d*) Hematoma
   (*e*) Gangrene
   (*f*) Localized thrombosis
   (*g*) Embolism
      1. Fat
      2. Gas
   (*h*) Infarction
   (*i*) Metabolic Complications
      1. Acidosis
      2. Hyperglycemia
      3. Absorption of transplant, either bony or cartilaginous.

IV. *Psychic Complications:*

   Psychoses ranging all the way from simple depression to mania.

The scope of this subject is so great that it is impossible to dwell on all complications in one paper. I shall consider here those complications which, in my own experience, have been most outstanding.

I. INFECTIONS

Notwithstanding the assiduous efforts made pre-operatively, the field of operation is never completely free from micro-organisms. In all operations the tissues must offer resistance to a certain amount of infective organisms. If contamination exceeds the degree of resistance, infection results.[2]

Sites. The most usual site for the development of infection is the region of the inner canthus of one or both eyes (fig. 1). Within the first 36 hours a small firm swelling appears, followed by redness, which can easily be differentiated from the redness caused

Fig. 1. Infection occurring in region of inner canthus of left eye.
Fig. 2. Sloughing of skin of nose following operation.
Fig. 3. Exostosis at base of frontal process of maxilla.
Fig. 4. Web joining lateral wall with septum and interfering with respiration.

by ecchymosis. This is followed by considerable increase in size of the swollen area, with complete obliteration of the inner canthus. The swelling resembles that of erysipelas of the edematous type.

The second site is over the dorsum of the nose. Infection in this area manifests itself by extensive swelling, which is at first firm and which then extends up over the forehead and both eyebrows.

The third locus is generally at the vestibule, where the needle is introduced for anesthesia at the base of the frontal process of the maxilla. Minor infections may occur at the base of the columella near the anterior nasal spine.

Diagnosis of Early Infection. The diagnosis of early infection rests primarily upon slight postoperative rise in temperature. The following are criteria which help in ascertaining the patient's condition:

1. An increase in pulse rate without a rise in temperature denotes irritability or pain.

2. A slow pulse with a rise in temperature denotes the absorption from bleeding of fibrin ferment.

3. A rapid pulse with a rise in temperature denotes infection.

Treatment of Infection. For *superficial infections,* applications of magnesium sulphate or compresses of Thiersch may be used at first. If they persist in spite of this treatment, very early incision and drainage must be instituted. In the presence of abscess, drainage should be obtained by re-opening the incision leading to the site of abscess, but if it is too distant from the incision for this procedure, it becomes necessary to drain it externally over its site. If, despite incision and drainage, infection should spread, bacteriophage or autogenous vaccine should be used. In some instances it will be found that the ordinary stock vaccines prove more efficient.

Experimental work shows that postoperative *angina* results from infection of the mucous membrane of the nose by lymphatic extension. This infection will occur in any nasal operation in which prolonged tamponade is used. This permits epithelial destruction and invasion by organisms. The tonsils, on the other hand, have been found experimentally to become involved by extension of the infection by way of the veins. When the richly vascularized turbinates are infected, the tonsils may become secondarily infected.

The complication of postoperative angina may occur in patients who are crowded into one ward. Patients who are placed in private rooms or who are ambulatory are seldom troubled with this condition. In addition to the obvious bacteriological explanation, there is a psychological one. It seems to be contagious because, in the event that one patient contracts it, all in the room seem to do likewise.

Whenever the mucous membranes become very edematous with decrease and possible blocking of air-way surface, the patient resorts to mouth breathing. The subsequent drying of the pharynx decreases its resistance, so that organisms can invade it more readily. In some of these cases there is also possible the accumulation of mucus in the postnasal spaces, which contributes to the possibility of infection.

These anginal attacks usually begin with severe headache and temperature which ranges from 100 to 101° F. The patient is weak and examination occasionally reveals follicular tonsillitis. With local treatment of bicarbonate of soda alternating with sodium perborate, an oxidizing agent, the angina subsides quickly and the temperature becomes normal in from two to four days.

Acute *otitis media* may occur after rhinoplasty, due to tamponade or forced blowing of the nose. The patient is advised not to blow his nose.

The lacrimal sac oftentimes may become inflamed (*dacryocystitis*) by an extension of an infectious process or by direct trauma. This appears as a cystic swelling below the inner canthus. On pressure, fluid and pus may come out through that punctum.

Meningitis—one of the dreaded complications of submucous resection of the septum—is usually of short duration. The cause is not definitely known but the condition is usually due to severe infection or the possibility of injury to the cribiform plate.

II. STRUCTURAL OR MECHANICAL COMPLICATIONS

Sloughing of the skin of the nose occurs most often following operations performed by inexperienced surgeons (fig. 2). It may result from cutting the layers of the skin too close to the epidermis while the skin is being separated

from the dorsum of the nose. It may also result from placing splints too tightly over the fractured frontal processes of the maxillae, causing ischemia which subsequently leads to necrosis of the skin.

Exostosis may occur at the site where a bone has been cut or fractured (fig. 3). This may occur on the dorsum of the nose or at the bases of the frontal processes of the maxillae. There may result a natural growth of bone as callus formation or as the result of the fusion of the bone spicules remaining near the surface from which they were severed.

Often the eagerness of the surgeon to impose improvement upon the form of the nose may cause him to impair its *function*. When the limiting bony wall of the nose is narrowed, partial obstruction and respiratory difficulty may ensue. Thus it is essential to ascertain whether deviation of the septum is present, and if so, whether operation on it is indicated before plastic correction is attempted. If too tight compression is placed on the fractured and medially displaced frontal processes of the maxillae, obstruction to breathing may occur fig. 4). At times a web joining the lateral wall to the septum may occur if two raw surfaces have been unduly exposed. The plastic surgeon at times must learn to sacrifice cosmetic perfection for normal function.

Laszlo[3] pointed out that *anosmia* may be temporary or permanent. Temporary anosmia disappears when the edema has disappeared from the nose. In cases of permanent anosmia some traumatic injury has been suffered by the olfactory region.

Cosmetic defects may be the result of faulty technic. Too energetic use of the rasp over the dorsum of the nose is to be deplored because its action will stimulate new bone formation. The original hump may then be replaced by a thick, broad, bony mass. More than a slight hump should be removed by the use of the saw which leaves a sharp cutting edge.

III. CIRCULATORY COMPLICATIONS

Hemorrhage is the most frequent of the circulatory complications. The surgeon must use adequate amounts of epinephrine during rhinoplasty to prevent bleeding. Other causes of bleeding may be separation along faulty lines of cleavage or tearing of the mucous membrane.

Hematomata may occur in a closed space. The most common site is alongside the base of the frontal processes of the maxilla. To avoid this complication the nasal clamp immediately should be applied firmly and tightly, to prevent postoperative hemorrhage under the skin. This also minimizes the amount of ecchymosis about the eyes. The clamp should be left in place for 48 hours or longer.

Shock is rarely seen following plastic operations of the nose.

IV. PSYCHIC COMPLICATIONS

Mental complications often follow rhinoplastic operations. Long before operation the patient had to combat his feeling of inferiority by overcompensating for his deficiencies or by escaping into an introverted world of his own. His circle of friends may have been divided on the question of correction, and thus the patient could combat this conflict of ideas only with his emotions because of a pre-existing oversensitivity. Reactions following rhinoplasty may range from psychosis to mania, and even suicide. It is good prophylaxis to have a psychiatrist's opinion of any patient who pre-operatively gives evidence of possibly becoming a postoperative mental problem.

AUTHOR'S RESULTS

A review of 500 consecutive cases operated upon for nasal reconstruction

by the writer reveals the following complications:

	Cases	Per Cent
Infection	4	0.8
Dacryocystitis	1	0.2
Exostosis	3	0.6
Hematoma	3	.06
Hemorrhage	2	0.4
Adhesions	2	0.4
Difficulty in breathing	4	0.8

Otitis media, anosmia and meningitis were not encountered.

CONCLUSIONS

1. A proper history of each patient and a thorough general examination are essential prerequisites to prevent complications.

2. Thorough operative training and operation-room sterility are essential.

3. Infections may be superficial, deep or general. Their presence must be recognized and treated accordingly.

4. The function of the nose must be considered of greater importance than the form of the nose and must be kept intact by proper management.

5. Hemorrhage and hematomata, the most important of the circulatory complications, can be prevented.

6. The psychic equivalent in rhinoplasty must be considered, and the help of a psychiatrist pre-operatively may save postoperative dilemma.

SUMMARY

An outline is given of the complications which may follow rhinoplastic surgery. These are grouped under the four headings of infections, structural or mechanical complications, circulatory complications, and psychic complications. Each of these four types is discussed. Percentage of occurrence in 500 of the author's cases is given.

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2. Harrison, P. W.: Postoperative Infections, Ann. Surg. 104:316-318 (Aug.) 1936.

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RÉSUMÉ

Les Complicationes dans les Opérations Rhinoplastiques

Il est donné dans cette communication un résumé des complications qui peuvent survenir dans le cours et après les opérations rhinoplastiques. L'auteur groupe ces complications sous quatre rubriques: infections, changements structurels, changements circulatoires et modifications psychiques. Ces complications sont étudiées et discutées. Leur frequence dans cinq cents cas de l'auteur est énumérée.

ZUSAMMENFASSUNG

Komplikationen in der plastischen Nasenchirurgie

Es wird eine Zusammenfassung der Komplikationen die plastischen Nasen-Operationen folgen können gegeben. Diese wurden gruppiert in 4 Infektionsabschnitte. Strukturelle oder mechanische Veränderungen Kreislaufs Veränderungen und psychische Veränderungen. Jeder dieser Abschnitte wird discutiert der Prozentsatz der vom Verfasser 500 beobachteten Fällen wird angeführt.

SUMARIO

Complicaciones de la Cirugía Rinoplástica

Una reseña es dada de las complicaciones que puede seguir cirugía rinoplástica. Estas estan agrupadas en los cuatro encabezamientos de infecciones, cambios estructurales y mecánicos, cambios circulatorios, y cambios físicos. Cada uno de éstos típos es discutido. El por ciento presentado en 500 de los casos del autor es dado.

RIASSUNTO

Le complicazioni nelle operazioni rinoplatiche

Un riassunto delle complicazioni che possano sopravvenire nelle operazioni rinoplastiche, viene discusso dall'autore. Queste complicazioni vengono classificate in 4 gruppi: infezioni, modificazioni strutturali o meccaniche, modificazioni circolatorie, e psichiche. Nella casustica dei 500 pazienti dell'autore, queste complicazioni vengono studiate e discusse.

The Committee on Scientific Research of the American Medical Association has made a grant to **Dr. Fritz Schiff,** of the department of bacteriology and serology of Beth Israel Hospital, New York City, to be applied toward his work on the serological classification of Salmonella, and a grant in support of work on the physiology of the peripheral blood vessels which is being conducted by **Dr. Roy H. Turner,** of the department of medicine of Tulane University.

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Dr. Raymond C. Parker, until recently an associate in experimental surgery at the Rockefeller Institute for Medical Research, New York, has accepted a position with E. R. Squibb and Sons, at New Brunswick, N. J., where he is in charge of the Virus Division of the Biological Laboratories.

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Dr. Philip R. Lehrman has been promoted to the rank of clinical professor of neurology and psychiatry at College of Physicians and Surgeons, Columbia University, New York.

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Dr. Paul B. Brooks, deputy state commissioner of health, was reappointed a member of the New York State Board of Medical Examiners for a term of three years, effective August 1, 1939.

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Col. Albert G. Love, U. S. Army Medical Corps, received the Wellcome Prize of the Association of Military Surgeons of the United States at the recent meeting of the association held in Washington, D. C.

Prof. Theodor Vahlen, president of the Prussian Academy of Sciences, has been awarded the Goethe Medal for Art and Science by the German Chancellor.

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Dr. Frances L. Haven, associate professor at the University of Rochester School of Medicine and Dentistry, has been granted a research fellowship by the National Cancer Institute at Washington.

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Prof. Ernst Freund has resumed his work as director of the Pearson Research Laboratory, which has been removed from Vienna to London. The laboratory has specialized in work on food chemistry and nutrition in its relation to cancer. It was founded by Frederick Pearson, an American now living in England. Dr. Freund's assistant, Dr. Gisa Kaminer, who was for many years surgeon at the Rudolf Hospital in Vienna, is also working in the laboratory at London.

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Dr. John A. Kolmer, professor of medicine at Temple University, Philadelphia, was invited by the Health Section of the League of Nations to represent the United States at the fourth International Conference on the Serologic Diagnosis of Syphilis, held in Copenhagen from September 25 to October 6.

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Dr. A. L. Derbyshire, of Sterling City, California, who has ministered to the ill and injured in this lumbering community for the past ten years, has become a ship surgeon on a Pacific liner. He is eighty-nine years of age.

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FELLOWSHIP DUES, AS WELL AS DUES FOR MEMBERSHIP AND ASSOCIATE MEMBERSHIP, ARE PAYABLE NOW AND SHOULD BE SENT TO DR. BENJAMIN I. GOLDEN, DAVIS MEMORIAL HOSPITAL, ELKINS, W. VA.

TREATMENT OF GASTRODUODENAL ULCER BY SUBTOTAL GASTRECTOMY

SUMMARY OF EXPERIENCE*

JOSÉ LASTRA CAMPS, M.D., F.A.C.S.

Consulting Surgeon, National Police Hospital

AND

CAPTAIN ANTONIO M. RODRIGUEZ DIAZ, M.D.

Chief Surgeon, National Police Hospital

HAVANA, CUBA

SINCE 1926 we have been treating gastric and duodenal ulcers by partial gastrectomy, with results superior to those obtained by less radical measures. The great frequency with which we observed a high percentage of gastritis, at least in our country, and the study of our resected specimens, together with the study of ulcerated lesions, have been in part responsible for our selection of extensive gastrectomy as the method of choice in the treatment of patients with such conditions.

In this paper we summarize the experience obtained in the hospitals Calixto Garcia and Joaquín Albarrán and, recently, at the National Police Hospital, during a period of thirteen years, the number of patients on whom gastrectomy has been done totaling 255. The results in 200 of these cases have already been discussed by one of us at the Seventh Pan-American Medical Congress held in Havana in January 1938. We have had, in clinical study and special investigations, the collaboration of our distinguished colleagues Milanés, Falla Alvarez, Vega, Sotolongo, Cutié and Zayas.

We are not including in this series those patients operated on during hemorrhage and perforation (we have done several such operations); those who had previously been submitted to gastro-enterostomy or those operated on for ulcers with malignant degeneration.

In regard to sex, 224 males and 31 females have been operated on.

The oldest patient was 74 years of age and the youngest 16. The longest period elapsed from the beginning of symptoms to the time of operation was thirty years, the shortest six months.

PREOPERATIVE TREATMENT

We have given special care to measures for general rehabilitation: hydration, etc. In anemic subjects and those with a low plasma protein level, transfusions have been used. If malnutrition was present, the patient was kept on a nutritive diet before operation. Focal infections were eradicated. Even in the absence of obstruction the stomach was washed for several days previous to operation. We had little experience with vaccination. Immediately before the patient is sent to the operating room, the Levine tube is passed through the nose, and it is kept in position for the first three days after operation. This reduces postoperative edema at the site of the stoma and combats toxemia caused by retention. The patient may begin to drink water every

* Read at the International Scientific Assembly of the International College of Surgeons, New York, May 22, 1939.

two or three hours from the time he gets back to bed and not suffer from thirst. This no doubt improves his mental condition a great deal.

We have also given attention to the study of the hemogram before deciding the time best suited for operating, and we have considered leukocytosis as an index that infection is active and surgical intervention in this condition will probably upset convalescence.

ANESTHESIA

Preference has been given to local and splanchnic analgesia, once the abdomen has been opened (Braun). On some occasions we have used combined methods: local and intravenous employment of amytal (this is no longer in use), local employment of protoxide of nitrogen and ether, local anesthesia and evipan, spinal anesthesia (tutocain, novocain, nupercaine and pantocain) and rectal anesthesia (avertin). Evipan has been very helpful in closing the wall after operation when used in sufficient quantities to desensitize the patient and produce relaxation of the abdominal muscles sufficient to permit easy closure. Such results are not obtained with the use of protoxide of nitrogen alone or in combination with ether, in which case deep narcosis must be produced in order to work without straining the wall.

OPERATIVE TECHNIC

We have tried different technics (Kocher, Billroth I and II, Moynihan I and II, Polya and its variations, etc.), giving preference to that of Reichel, Hofmeister and Finsterer, based on the following principles: resection of the two thirds of the stomach, including the lesser curvature as much as possible, sectioning parallel to the long axis of the body, and partial closure of the gastric section (the upper part), using only the inferior portion for the anastomosis, which is done through the mesocolon and with a short loop to avoid duodenal back pressure.

When it has been feasible, the lesion was included in the resected specimen, but when we dealt with ulcers situated at the duodenum, far from the pylorus, ulcers the anatomic conditions of which made extirpation dangerous, we have preferred the classic exclusion method of Finsterer (gastrectomy, leaving the lesion in situ). We have had excellent results with this technic and never had cause to regret its use.

The duodenal stump is made with the greatest care, keeping in mind that one of the most important details during this operation is to maintain a good blood supply to the visceral wall. Rupture of the duodenal suture is a distressing complication and is sometimes fatal. In our early experience we had various accidents of this kind, but now, with a better understanding of the problem, this complication is rare, and when it is present adequate treatment is instituted: continuous suctions first and then packing of the sinus.

When making the anastomosis, proper hemostasis is of capital importance to avoid postoperative bleeding, which can be very serious, even threatening the patient's life. Before starting to suture, the bleeding vessels must be tied.

POSTOPERATIVE CARE

The patient is placed on a Fowler's bed, and the gastric tube is connected to an aspiration system such as Wangensteen's. The patient is allowed to drink water every two or three hours, which is immediately aspirated, but it is useful to prevent thirst, and at the same time keeps the stomach empty, avoiding the deleterious effects of retention (this method was introduced among us by Prof. Núñez Portuondo). The water balance of the body is maintained by continuous venoclysis of dextrose and saline solutions in amounts of 2,000 to 3,000 cc. every twenty-four hours, depending on the output through various emunctories: kidneys, skin, etc. The

blood chemistry must be closely watched, especially in regard to chlorides, for those patients who lose a great amount of chlorides through the stomach tube. At frequent intervals analyses of the total chloride content (globular and plasmatic, urea and alkaline reserves) are made.

abscess formation. We think that undue mobilization of the patients and allowing them to strain has much to do with the onset of infarcts. We have reduced the frequency of these with the permanent use of the gastric tube. Formerly we washed the stomach once or twice daily with the large stomach

TABLE 1

SYNOPSIS OF 16 DEATHS IN 255 CASES OF GASTRODUODENAL ULCER TREATED BY SUBTOTAL GASTRECTOMY*

No. of Cases	*Complications*	*Comment*
7	Pulmonary	Generally of embolic nature, with infarct; 2 patients died owing to multiple lung abscesses
1	Subphrenic abscess	After multiple lung abscesses patient died 2 months postoperatively
2	Unknown	Dysenteriform diarrhea with high temperature on the 12th postoperative day; hyperthermia on the 2nd day
5	Duodenal perforation	A diabetic patient had perforation of the duodenal stump, dying 32 days after operation with advanced malnutrition; another patient died 2 days after perforation, presenting simultaneously a pulmonary complication
1	Heart disease	A case of advanced syphilis, although well treated; during operation old syphilitic lesions were found in the liver

* A mortality of 6 per cent.

During the first three postoperative days only water is given by mouth; this, as has been stated, is immediately aspirated. On the fourth day, if everything is well the tube is withdrawn and small quantities of albumin water and tea are given. Twenty-four hours later, the administration of milk is begun, and from the seventh to the eighth day soft food, such as cereals and mashed vegetables, are allowed. All other indications are those prescribed for any ordinary laparotomy case.

We have recommended that, when possible, the patient inhale several times daily a mixture of oxygen and carbon dioxide, with the purpose of preventing pulmonary complications.

COMPLICATIONS

The most commonly observed complications were pulmonary, occurring in 11.8 per cent of all the cases and ranging from mild bronchitis to lung infarct, which may be followed by secondary

tube, to which the patients objected greatly, this washing being followed by contractions of the muscles of the abdominal wall and diaphragm.

Perforation of the duodenal stump was observed in 4.3 per cent of the patients, 5 of whom died. The others recovered in from fifteen to forty-five days, with no untoward results. This complication is treated by suction and plugging the sinus.

We have had 2 cases with postoperative hemorrhage serious enough to endanger life. In both cases this complication occurred on the second postoperative day. Good hemostasis during the gastro-intestinal suturing is the best prophylaxis, and the bleeding blood vessels should be ligated separately before starting the continuous suture.

Diarrhea was present in 3.1 per cent of the patients when they started feeding, and lasted a few days. This complication is rather difficult to explain.

In our series we have seen 3 cases

(1.2 per cent of the whole group) in which secondary peptic ulcer developed. In one instance the ulcer was visible through the gastroscope by Dr. Falla Alvarez forty-five days after primary operation, and in another the borders of the lesion showed something resembling a foreign body, possibly a fragment of the suture material employed and not reabsorbed, although we always used catgut for all the inner sutures of the anastomosis of the digestive tract. This patient was not operated on a second time, but remained in the ward for observation. The third patient began to complain again of symptoms six months after gastrectomy. This patient was reoperated on three years later, and a callous ulcer at a marginal site and another on the mesenteric border of the jejunal efferent loop were discovered. The second operation was extremely difficult, as is generally the case in this condition. We resected the affected intestinal loop along with part of the gastric wall and made a new gastro-entero-anastomosis. We feel that the future of the patient is uncertain.

POSTOPERATIVE STUDY

The gastric function of a large number of our patients has been studied by Drs. Milanés, Falla Alvarez and Vega. In more than two thirds of the cases they observed secretion of chyle during the fasting period, as well as in the digestive cycle. In 9 per cent of the cases hyperchlorhydria persisted, although it was not as marked as before operation. The amount of hypersecretion has also been favorably modified in most of the cases. In more than 50 per cent of the patients hypermotility was found. For more details we recommend to the reader the works of Dr. Fernando Milanés.[1] This investigator studied a large series of patients, many of whom were operated on by us. The anastomosis has been very successful in the great majority of cases. Few of the patients had mild spasm without symptoms, and one, who had been operated on for an ulcer of the lesser curvature, suffered a marked spasm of the stoma during the digestive cycle.

TABLE 2

SUMMARY OF THE 255 CASES

	No. of Cases	*Percentage*
Sex		
Females	31	12.16
Males	224	87.84
Age		
Oldest patient, 74 yrs.		
Youngest patient, 16 yrs.		
Localization		
Duodenal	116	45.00
Juxtapyloric	60	20.00
Lesser curvature	79	35.00
Type of Anesthesia		
Local and splanchnic	227	89.00
Local and amytal	6	2.37
Local and evipan	9	3.50
Gas and ether	5	2.00
Spinal	7	2.74
Rectal (avertin)	1	0.39
Type of Operation		
Billroth II	1	0.39
Moynihan	1	0.39
Polya-Balfour	4	1.56
Reichel-Hofmeister-Finsterer	235	92.16
Complications		
Pulmonary (From bronchitis to lung abscesses)	30	11.77
Subphrenic abscess (Consecutive multiple lung abscesses)	1	0.39
Duodenal fistula (Early and late)	11	4.31
Hemorrhage (On 2nd postoperative day)	2	0.78
Diarrhea (Always mild and transitory)	8	3.12

COMMENT

Although subtotal gastrectomy is far from being the ideal treatment of gastric and duodenal ulcers, there is no doubt that for the present, at least, it must be considered the operation of choice in the surgical treatment of these conditions, for, as has been pointed out by Milanés in his work, after subtotal gastrectomy a physiopathologic condition militating against the formation of ulcer is established, doing away with hyperchlorhydria and hypersecretion and improving the vagal syndrome as well as the

emptying time of the stomach. These favorable modifications are obtained in the great majority of the patients when a correct technic is followed during the operation, and the surgeon must keep in mind his purpose in the case of a patient suffering from peptic ulcer.

SUMMARY

The results obtained with partial gastrectomy in 255 cases of gastric and duodenal ulcer are presented. There were 16 deaths, a mortality of 6 per cent. The preoperative treatment, anesthesia, operative technic, postoperative care, complications and favorable end-results are described.

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DISCUSSION

DR. R. W. MCNEALY, Chicago: The complications of resection have interested me, particularly recently, because it has been my privilege to confer with a number of my colleagues when they were in difficulty. Probably the greatest number of complications that I see in resections of the stomach arise from the method of handling the duodenum. Whether this is due to a lack of anatomic knowledge of this area, or fear of injuring the common duct, or invading the pancreas or the gastroduodenal artery, I am not sure, and whether it is due to a lack of appreciation of the importance of the peritoneum, enclosing the duodenum, I do not know.

One may venture to say, however, that a rather high percentage of the accidents occur from leakage of the duodenum. In some cases I have seen recently the patient had a fistula following a resection. The character of the contents made it difficult to decide the source of the discharge, but I felt that in the majority of cases the discharge came from the duodenum. When investigation revealed this to be true, it strengthened my belief that the duodenum is the site of the greatest number of leakages.

We are inclined to pay particular attention to the method of suturing the stomach. Hurrying over the duodenum to secure speed deprives us of the safety which should reside in a thorough closure and a careful inspection after it is closed.

DR. SIMON REISLER, Indianapolis: Attention has been called to the subject of complications following insecure suturing, and the hemorrhage which follows suture of the duodenum or the stomach. Dr. McNealy called attention to the fact that at times there is complication of fistula.

I have an exhibit showing a hemostatic improved suture of the stomach and bowel. The suture consists of a combination of reverse crossed loops, which tend to protect the edges of the sutured viscera and to produce better approximation. It has been successful in my hands, and I hope that it will be a factor in producing better security following suture of the stomach and bowel.

It is not dependent on a continuous suture. I use a continuous suture over the clamps, but I take the clamps off and make the suture taut, and use that suture only as a carrier for the hemostatic suture. I put no dependence on the running suture. This is used to hold the tissues together, and a hemostatic suture is used over it, one that goes through and through and back and forth and advances as it goes forward. This is a safer method of closing the duodenum or the stomach. At times I take the ends of this running suture, which I use as a guide, and tie them together, thus infolding the sutured stump.

DR. RICHARD A. LEONARDO, Rochester, N. Y.: Whenever I go to Europe I visit the Verebely clinic in Budapest, in order to see the assistants doing the gastrectomy. They use a stomach clamp —a mechanical suturing device. They employ a De Petz clamp, and by this means they are able to remove two-thirds of the stomach in thirty-five minutes. I started to do operations on the cadaver there. The cheapest place I know of for this purpose in Europe is in Budapest. For $10 or $15 a day one can do as many cadaver operations as he wishes. With the assistance of a professor and an orderly who acts as a male nurse, the De Petz clamp works well. It saves a great deal of time, but I am fairly convinced that after it has been used for several years the free ends of the clamp do not press the stomach together firmly. All the professors who use these clamps abroad have to fasten a small device on the free end of the clamp, with a thumb screw, turn that screw and tighten the free ends of the jaw of the clamp. Then they insert the removable wheel and turn it toward themselves, and that inserts the silver clips. The clips are stapled one pair at a time, and in inserting them a rod comes out from the back of the machine, so there are three handles projecting. Two rows of stitches are made, 22 clips on each side.

This saves a great deal of time, but I thought of a way of improving the clamp. I noticed that when one cuts between the two rows of clips, often some of the clips do not fit well, the clamp

does not crush well enough and the staples on the posterior surface of the stomach are not completely closed. As a result there is a slight leakage or oozing of blood. In my new clamp (recently devised by me) I have employed a double row of clips on the proximal side of the stomach. On that part of the stomach to be removed a single row is sufficient. One should make sure that the stomach is sufficiently compressed so that these sutures are properly inserted. I added a locking device in the front that will not come loose when one closes the handles. I insert a removable handle, not unlike the handle of a screwdriver, depress it toward me, and this inserts all the clips simultaneously. That saves considerable time over the method in which the clips are inserted by the De Petz clamp. On the back of my instrument is a ring. Pulling on this ring causes a guillotine knife situated in the nose at the free end of the clamp to travel along the track in the lower jaw of my clamp. This cuts the stomach from the lesser to the greater curvature completely, so that when one opens the jaws of my clamp, the two halves of the stomach fall away from each other completely sealed off.

RÉSUMÉ

Le traitement de l'ulcère gastro-duodénal par le gastrectomie sous-totale

L'auteur présente les résultats obtenus par la gastrectomie partielle dans 255 cas d'ulcère gastrique et duodénal. Il eut 16 décès, une mortalité de six pour cent. Il décrit le traitement pré-opératoire, l'anesthésie, la technique opératoire, les complications et les résultats heureux qu'il a obtenus.

ZUSAMMENFASSUNG

Behandlung der Magen-Zwölffingerdarm Geschwürs durch subtotale Gastrektomie

Die Erfolge teilweiser Magenresektion bei 255 Fällen von Magen und Zwölffingerdarm Geschwüren werden augeführt. 16 Todesfälle, das heisst eine Sterblichkeit von 6%. Die Vorbehandlung, Anästhesie, Operationstechnik, Nachbehandlung, Komplikationen und befriedigende Endresultate werden beschrieben.

SUMARIO

Tratamientos de Ulceras Gastro-duodenales por la Gastrectomia Subtotal

En 255 casos de úlceras gastricas y duodenales, los resultados obtenidos por la gastrectomia parcial, son los siguientes; Hubieron diez y seis muertos, una mortalidad de seis por ciento. El tratamiento preoperativo, anestesia, técnica operativa, atención post-operativa, complicaciones y resultados finales favorables son descritos.

RIASSUNTO

Il trattamento dell'ulcera gastro-duodenale con la gastrectomia subtotale

I risultati ottenuti con la gastrectomia parziale in 255 casi di ulcera gastrico e duodenale, vengono riportati. La mortalità è stata del 6 per cento. Il trattamento preoperatorio, l'anestesia, la technica operatoria, le complicazioni, il trattamento postoperatorio e i risultati, favorevoli ottenuti, vengono discussi.

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Prof. Francesco Pentimalli, professor of pathology at the University of Naples and a member of the Italian Parliament, arrived in New York on August 17 to attend the International Congress of Microbiology in New York and the Cancer Research Congress in Atlantic City.

Dr. George W. Corner, professor of anatomy, University of Rochester School of Medicine and Dentistry, has been appointed managing editor of the *American Journal of Anatomy.*

TYPHLO-APPENDICITIS*

COLONEL JULES VONCKEN, M.D., F.I.C.S.

Service de Santé, Belgian Army

LIÉGE, BELGIUM

THE complications which may occur after appendicectomy are well known and have been fully described. I believe, however, that the complications which may arise from the infection of lymphoid tissues at the base of the cecum have rarely been mentioned. In fact, in certain cases, the infection is not limited to the appendix proper but invades the entire surrounding area of the appendicular implantation in the cecum and thus gives rise to complications which must have been present before the removal of the diseased organ.

A case of this kind is herewith reported because its dramatic development and the operative findings attracted my attention to this pathologic phenomenon which we might term "typhlo-appendicitis."

CASE REPORT

A young girl of 16 was referred to our clinic because of symptoms of acute appendicitis of six or seven hours' duration. The diagnosis was unmistakable and we operated immediately, removing an appendix definitely inflamed and turgescent. Appendectomy was done with cauterization after ligature, without inversion of the stump.

The operative sequelae were most dramatic. The first day the temperature remained at 38.2° and the pulse at 120. The second day, vomiting set in; abdominal palpation elicited pain, especially in the right iliac fossa. At the end of the second day, we realized that we were dealing with a severely acute appendicular situation.

The morning of the third day, after a very definite exacerbation during the night, the pain had somewhat subsided, but the pulse had become more rapid; the facies were shrunken. We suspected peritonitis and decided to drain the peritoneum. When the original incision was re-opened a sanious, fecaloid fluid escaped. We had the impression that the ligature had slipped and that this accident had induced the peritoneal infection. We exposed the cecum, brought it to the surface and found the ligature of the appendicular stump intact; but there was a circular perforation in the center of the base of the cecum, about one centimeter from the appendicular stump. We closed and deeply invested this perforation. We inserted a Mikulicz drain which was removed on the eighth day. Recovery with slight eventration followed.

COMMENT

Study of this case has attracted our attention to the pathology of acute complications which may develop in the ceco-appendicular region. This patient, who presented an unforeseen complication, actually underwent two successive attacks at an interval of 48 hours, presenting each time the clinical picture of acute appendicitis. Removal of the diseased appendix did not eliminate the infection, which, instead of being localized in the appendix, actually extended beyond the point of its implantation in the cecum. The operative procedure could not eliminate the infection, which, instead of being localized in the appendix, actually extended beyond the point of its implantation in the cecum.

Thus we observed the development of a case of acute perforative appendicitis occurring after the removal of the appendix. We were actually dealing with a case of typhlo-appendicitis. It is to this different entity of appendicitis that I wish to call attention because it develops differently and requires a surgical procedure quite different from that employed for an uncomplicated case of appendicitis.

* Read at the Scientific Assembly of the International College of Surgeons, New York, May 23, 1939.

From the moment we became aware of the fact that infection had extended beyond the appendix proper, we directed our efforts to the removal of the entire infected area.

Subsequent to this dramatic case, which we might term "recurrent appendicitis after appendicectomy," we have performed approximately 300 appendicectomies and we have observed that in 20 instances the inflammation extended beyond the appendix itself and definitely encroached upon the cecal region. In other words, in 20 cases out of 300 cases of acute appendicitis confirmed by operation, we found evidences of typhlo-appendicitis. To be sure, the phenomena observed in these cases were not always as serious as in the case reported, but we believe that certain clinical facts and the operative measures required by them should be recognized.

TYPES OF INFLAMMATION

The phenomenon of ultra-appendicular inflammation—if it can thus be called—may be divided into three categories, as follows:

1. *Typhlo-appendicitis:* This is a simple infection extending to the base of the cecum surrounding the appendicular implantation.

2. *Typhlitis:* The infection may extend to the entire base of the cecum.

3. *Pantyphlitis:* The infection may cover the entire cecal region up to and including the ileocecal valve and the terminal area of the ileum.

Essentially these three categories represent a greater or less degree of extension of the same infection. Let us consider them in some detail.

1. *Typhlo-appendicitis.* We expose the cecum. The appendix appears inflamed and congested and in the process of becoming gangrenous. The case is typical of acute appendicitis. If the base of the cecum is soft and noncongested, we can say that the infection is localized in the appendix. Simple appendicectomy without inversion of the stump is the operation of choice; but it is important to inspect closely the entire rim of the appendicular implantation and its adjacent tissues. If this circular zone is edematous or infiltrated, the infection has extended beyond the appendix. In the presence of a typhlo-appendicitis it is not enough to do a simple appendicectomy without stump inversion; to do that would be equivalent to removing only a portion of a malignant tumor. We must proceed so as to avoid the possibility of a perforation, such as occurred in the case reported above. We must protect the peritoneum against the infection of the cecal wall. This is accomplished by inversion, not only of the stump but of the entire infiltrated area, in the form of a cecal fold; the cecum is ample enough to permit such a procedure. From this point of view, the problem of inversion of the appendicular stump assumes real importance.

In cases in which inversion of the stump is an absolute necessity, we are dealing with a localized typhlo-appendicitis; the peritoneum is in danger of an infection which we have not been able to extinguish and which continues to spread. The important point to remember is that we always should invert the entire infiltrated cecal region when typhlo-appendicitis is present.

2. *Extensive Typhlitis.* Stump inversion is not always possible when the zone of infiltration, edema and induration have extended beyond the base of the cecum. We cannot possibly remove the lesion. In these cases it is our practice to bring the cecum up to the edges of the operative incision in the peritoneum, which is drained by a very fine wick, so that all the infectious elements which might induce serious peritoneal complications are maintained in close contact with the abdominal wall.

3. *Pantyphlitis.* The entire ileocecal segment is infiltrated. The meso-

cecum is edematous; a greenish gelatinous secretion covers all the affected tissues; the appendix is necrotic and adheres closely to the ileum or the mesentery. We cannot hope to remove this infected mass. Simple appendicectomy is insufficient because this would be followed by two dangers—persistence of the infection and possibly a secondary mesenteric hemorrhage. Only a single procedure is possible after the appendicectomy. Despite the danger of postoperative eventration, a large Mikulicz drain assures control of the infection and of possible hemorrhage. This is our practice and it is the only procedure which offers hope of recovery.

CONCLUSIONS

This clinical study requires further histological confirmation. The operative findings should be confirmed by the presence of obstructed follicles and lymphoid organs similar to those of the wall of the appendix. Such a study, which requires the examination of numerous histological sections, is under way, and I hope to be able to publish the findings in the near future.

SUMMARY

A case of acute appendicitis occurring in a girl, aged 18, is reported. Complications made a second operation necessary on the third postoperative day, when a perforation of the base of the cecum was found. Recovery followed. Typhlo-appendicitis, typhlitis, or pantyphlitis may occur. Methods of treatment of these conditions are described.

DISCUSSION

DR. JAMES A. GETTINGS, New Haven, Conn.: I think complications would be greatly lessened if an early diagnosis were made. I always drain, and I always invert the appendix. One feature that has interested me very much is the complication of embolism. I read an interesting paper some years ago on the probable explanation of some of the causes for this condition following acute appendicitis. The nurse, wishing to do all she can to aid the comfort of the patient, sometimes resorts to vigorous massage, which could well initiate a thrombosis, followed by a fatal embolism. Greater dependence should be placed on physical rather than laboratory findings in all cases of acute appendicitis, whether or not diagnosis is made early.

DR. FELIX CUNHA, San Francisco: The question of whether to drain or not to drain or whether to invert or not to invert could be discussed all day and all night. Each surgeon has his own opinion, based on personal experience, and, after all, one expresses one's individuality in doing surgery. One should not have any set rules or formulas and should adapt oneself to the case at hand.

With regard to inversion, that depends entirely on the condition of the wall. If there is a good, noninflammatory area, one may invert; but if there is a great deal of inflammation one is likely to get into more trouble by inverting, with probably a residual abscess.

As to the question of the complication of embolism, I wonder if this cannot be avoided in very bad cases, in which pus is present in large amounts, by going up a bit, where the appendiceal vein enters, and possibly interrupting the path of embolism.

DR. ANDRÉ CROTTI, Columbus, Ohio: Complete resection of the cecum should be done only rarely. I have had to resort to that, but the condition was no longer acute appendicitis; it was subacute and protracted and had produced massive involvement of the cecum and massive attachment of the adjoining loops of bowels, causing obstruction.

DR. VONCKEN: Some surgeons still follow the method of not draining, even after perforation. That is entirely incomprehensible to me. Also, I feel that the appendix should not be left behind. My practice is to remove it, because I feel that even after marked perforation few or no complications will follow removal of the appendix.

RÉSUMÉ

Typhlo-appendicite

L'auteur rapporte un cas d'appendicite chez une jeune fille de 18 ans. Le troisième jour apres l'operation, des complications survinrent et, demandèrent une seconde intervention. Il y avait une perforation du coecum la malade se retablit. La typhlo-appendicite la typhite, et la périty phlite peuvent

compliquer l'appendicite. Le traitement de ces conditions est donné en détail.

ZUSAMMENFASSUNG

Typhloappendicitis

Ein Fall von akuter Appendicitis, in einem 18 Jahre alten Mädchen, wird berichtet. Komplikationen machten eine zweite Operation notwendig am dritten Tage nach der Operation, als man eine Perforation der Basis des Coecums fand. Genesung folgte. Mögliche Komplikationen sind Typhloappendicitis, Typhlitis oder Pantyphlitis. Behandlungsweisen dieser Zustande werden beschrieben.

SUMARIO

Tiflo-Apendicitis

Un caso de apendicitis aguda presentado en una joven de 18 años, es presentado. Complicationes hicieron una segunda operación necesaria en el tercer dia post-operatívo, y una perforación de la base del ciego fué encontrada. Mejoría siguió.

Tiflo-Apendicitis, tiflítis, ó pantiflitis pueden presentarse. Métodos de tratamiento de éstos casos son descritos.

Attend the

NATIONAL ASSEMBLY

of the

UNITED STATES CHAPTER

of the

INTERNATIONAL
COLLEGE OF SURGEONS

Venice, Florida
February 11-14, 1940

Meetings and Congresses

HARLOW BROOKS MEMORIAL CONFERENCE

Dr. Charles H. Arnold, executive secretary of the scientific section of the United States Assembly, addressed the fourth Harlow Brooks Memorial Navajo Clinical Conference held August 28-30 at Ganado, Arizona. His subject was "Treatment of the Ruptured Appendix."

Dr. George W. Crile, of Cleveland, spoke on "The Antithetic Influence of Reason and Emotion in the Genesis of Coronary Disease and Hypertension. The address was divided into two sections, Part I, "The Mechanism of Reason and Emotion," given August 28, and Part II, "Clinical Application of Findings," given August 30.

Others scheduled to speak and their subjects were Dr. Joseph M. Greer, Phoenix, Arizona, who presented bone and joint cases; Dr. Ray M. Balyeat, of Oklahoma City, Oklahoma, "Diagnosis and Treatment of Common Allergic Manifestations Encountered by the General Practitioner" and "Diagnostic and Therapeutic Value of the Use of Iodized Oil in Chronic Asthma and Bronchiectasis"; Dr. Alfred E. Gallant, of Los Angeles, "The History and Treatment of Acute Fractures of the Femoral Neck"; Dr. Robert Stanley Flinn, of Phoenix, "The Treatment of Cardiac Irregularities"; Dr. Phil W. Shumaker, of Los Angeles, "Intra-Gastric Photography"; Dr. E. Forrest Boyd, of Los Angeles, "A Doctor Looks at Medicine Around the World Through Colored Movies"; Dr. John G. Hayden, of Kansas City, Missouri, "The Treatment of Varicose Veins"; Dr. Max Thorek, of Chicago, "Advantages of Electrosurgical Obliteration of the Gall Bladder Over Classical Cholecystectomy."

Others were Dr. E. Payne Palmer, of Phoenix, Arizona, "Early Diagnosis and Radical Treatment of Caricnoma of the Colon"; Dr. William E. Branch, of Los Angeles, "Gastric Resection"; Dr. Thomas G. Orr, of Kansas City, "The Treatment of Fresh Wounds and Wound Healing" and "The Management of Acute Intestinal Obstructions"; Dr. Carl Rusche, of Los Angeles, "Injury of the Ureter, Including Surgical, Intraureteral Instrumentation, External Violence and Foreign Bodies, with a Report of Fifty Cases"; Dr. Charles A. Thomas, of Tucson, Arizona, "Extrapleural Pneumothorax in Tuberculosis"; Dr. J. H. Patterson, "Gall Bladder Subserous Dissection and Lipidol Injection of the Common and Hepatic Ducts"; Dr. E. Forrest Boyd, "Pneumonia"; Dr. Frank R. Teachenor, of Kansas City, Missouri, "Surgical Relief of Intractable Pain"; Dr. William H. Daniel, of Los Angeles, "Cancer of the Rectum"; Dr. W. Warner Watkins, of Phoenix, "The Correlation of Clinical and Roentgenological Evidence in Chest Diseases"; Dr. Charles W. Sechrist, of Flagstaff, Arizona, "Nursing Problems in Small Hospitals"; and Dr. E. A. Campbell, of Gallup, New Mexico, "Differential Diagnosis in Gastric Carcinoma."

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American Congress of Physical Therapy

The eighteenth annual session of the **American Congress of Physical Therapy** was held at the Hotel Pennsylvania, New York, September 5-8. The formal opening of the congress took place on the evening of September 5, with addresses of welcome by Drs. Terry M. Townsend, New York, president of the Medical Society of the State of New York; Farel Jouard, New York, president, New York Physical Therapy Society, and Benjamin Ulanski, Philadelphia, president, Pennsylvania Therapy Association.

Dr. William H. Schmidt, Philadelphia, made his official address as president on "The Future Development of Physical Therapy." Other speakers included Drs. Bayard T. Horton and Frank H. Krusen, Rochester, Minn., on "An Evaluation of Methods and Mechanical Devices for Producing Increased Blood Flow in the Extremities;" Horatio B. Williams, New York, on "Radio Interference by Electric Apparatus," and Russell L. Cecil, New York, on "Physical Therapy as Compared with Other Forms of Therapy in Arthritis."

The section on eye, ear, nose and throat held sessions September 6 and 7. The general scientific session on September 7 was devoted to a symposium on fever therapy.

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The **Third International Cancer Congress** was held in Atlantic City, N. J., September 11-15, at the Haddon Hall Hotel under the presidency of Dr. Francis Carter Wood, New York.

Sections of the congress and their chairmen were as follows:

Biophysics, Gioacchino Failla, D.Sc., New York.
Genetics, Clarence C. Little, Sc.D., Bar Harbor, Maine.
Experimental pathology, Dr. William H. Woglom, New York.
General pathology, Dr. Milton C. Winternitz, New Haven, Conn.
Surgery, Dr. Frank H. Lahey, Boston.
Diagnostic roentgenology, Dr. John D. Camp, Rochester, Minn.
Therapeutic radiology, Dr. Ursus V. Portmann, Cleveland.
Statistics and education, Dr. Burton T. Simpson, Buffalo.
General section, Dr. Francis Carter Wood, New York.

Each evening lectures were presented surveying some special field. Included in these lectures was one by Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, Washington, D. C., on "Cancer and the Public Health," and one by Dr. James Ewing, New York, on "Cancer, Present and Future."

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The **Italian National Congress of Obstetrics and Gynecology** will be held in Turin October 15-18. The official topics are gynecologic symptoms of extragenital diseases and ovarian hormone treatment in obstetrics and gynecology.

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A course in balneology will be offered by the **Hungarian Postgraduate Medical Education Committee** in Budapest October 2-8. The program will be sent on request to the committee, Esterhazy-utca 9, Budapest VIII.

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The **International Congress of Americanists** began its twenty-seventh session on August 5 in Mexico City, under the patronage of President Cardenas. Over three hundred students of archeology, anthropology and history were in attendance. Dr. Alfonso Caso, director of the National Institute of Archeology and History, Mexico City, was elected president, and General Cardenas honorary president. T. A. Joyce, lately of the British Museum, and M. Paul Rivet, of the Museum of Man in Paris, were chosen honorary vice-presidents. An excursion was made to the pyramids and the museum at San Juan de Teotihuacan.

The seventh congress of the **Association pour la Documentation photographique et cinématographique dans les sciences** will be held in Paris on October 12 and 13. On the first day members will meet at the Palais de la Découverte and on the second day at the Musée Pedagogique de l'État. Further information may be obtained from Dr. Charles Claoué, 39, rue Scheffer, Paris, 16.

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The fourth international congress under the auspices of the **European Society of Structive Surgery** will be held in Paris October 5-7. Prof. Pierre Sebileau, Paris, is honorary president and Dr. Leon Dufourmentel is president. The subjects chosen for discussion are treatment of deformities resulting from scar retractions of the eyelid and treatment of deformities of the jaw. Other communications will be strictly limited to subjects in plastic and reconstructive surgery. For further information address the secretary of the congress, Maison de Chirurgie, 9 rue de Turin, Paris.

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The twelfth **International Congress of the History of Medicine** was held in Berlin from September 22 to 28, 1940. The chief subjects for discussion were the evolution of medicine in different countries from Harvey to Haller, the epoch of medical philosophers, introduced by Dr. Laignel-Lavastine, professor of the history of medicine in the faculty of medicine of the University of Paris, and the history of typhus, introduced by Professor Zeiss, director of the Institute of Hygiene of the University of Berlin

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The fourth **Congress of French-Speaking Electroradiologists** will be held in Paris October 11-14 under the presidency of Dr. Louis Delherm. This congress was posponed from October, 1938. Those who wish to attend should send applications as soon as possible to M. le Dr. Dariaux, secretary-general,, 9 bis, Boulevard Rochechouart, Paris 9.

News and Personals

Publication of **"Revista de Medicina y Cirugia,"** monthly organ of the Neoleonés Syndicate of doctors and surgeons, has been begun in the city of Monterrey.

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For the purpose of presenting diplomas of Fellowship to members of the **Mexican Chapter of the International College of Surgeons,** a brilliant reception was held August 26 in the Quinta del Lago, sumptuous residence of Dr. Abraham Gonzalez, F.I.C.S.

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Mexican scientific societies unite in the celebration of the third centennial of the death of the noted Mexican, **Don Juan Ruiz de Alarcon,** whose genius shone in the Century of Gold for the glory of Castilian letters; the great classicist died in Madrid August 4, 1639, and his remains lie in the parish of St. Sebastian of that city.

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September 3-8 the third **medical week** organized for the Neoleonés Syndicate of doctors and surgeons took place in the city of Monterrey.

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On August 10 the clinic and sanatorium of orthopedic and traumatic surgery of Dr. Alfonso Ortiz Tirado, F.I.C.S., was opened.

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New officers of the American Physicians' Art Association who took office July 1 include **Drs. Henry N. Moeller,** New York, president; **Edward E. Woldman,** Cleveland; **Herbert L. Treusch,** Atlanta, Ga., and **Alfred Braun,** New York, vice-presidents. **Dr. Raleigh W. Burlingame,** San Francisco, is treasurer; **Drs. Max Thorek,** Chicago, and **Francis H. Redewill,** San Francisco, are recording and corresponding secretaries, respectively. The next exhibition of the association will be during the Annual Session of the American Medical Association in New York June 10-14, 1940.

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Arnold F. Emch, Ph.D., has resigned as executive director of the Chicago Hospital Council to become assistant secretary of the American Hospital Association.

The **Ophthalmic Institute of Puerto Rico,** established in 1937 by **Drs. Luis J. Fernandez-Garcia** and **Ricardo F. Fernandez** in San Juan, recently moved into a new building in Puerto de Tierra, near San Juan. The new institute, built at a cost of about $70,000, has four floors. On the first floor are the offices; on the second, private rooms and an operating suite; on the third, wards; and on the fourth, living quarters for the resident staff. In the basement is a dispensary. **Dr. Luis J. Fernandez-Garcia,** a graduate of the University of Maryland School of Medicine in 1917, is director and chief surgeon. **Dr. Ricardo F. Fernandez,** a graduate of George Washington University School of Medicine, Washington, D. C., in 1931, is assistant surgeon.

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On July 1 there was opened in the town of San Angel, Federal District, **a new center of experimental therapeutics;** this institution bears the name of E. von Behring.

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Dr. Percival Bailey, professor of surgery and neurology, Department of Medicine, University of Chicago, has been appointed professor of neurology and neurological surgery at the University of Illinois College of Medicine.

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Dr. Margaret E. Lewis, formerly of the Johns Hopkins University, has joined the staff of the new Crocker Radiation Laboratory of the University of California. She plans to undertake an investigation of the effect of neutrons on tissue cultures.

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Work of the Rockefeller Foundation in 1938.— A review of the work of the Rockefeller Foundation by Mr. Raymond B. Fosdick, president, shows that during 1938 the Foundation appropriated a total sum of over $15,000,000. Of this amount, speaking in terms of rough classifications, $3,800,000 was given to the medical sciences, $3,800,000 to the social sciences, $3,000,000 to the natural sciences, $2,500,000 to public health, $1,000,000 to the humanities and $300,000 to rural reconstruction in China. The Founda-

tion's income during 1938 was approximately $7,000,000. In appropriating $15,000,000 it was necessary, therefore, not only to use up the balance carried over from earlier years, but to use $3,755,000 from the principal fund. In carrying out its 1938 program the Foundation operated in forty-two countries in all parts of the world. Eighteen of these countries were in Europe, five in Asia, two in Africa, five in South America, and ten in North and Central America and the West Indies; two were islands of the Pacific. Twenty-five per cent of the money given went to foreign countries, and the remainder, seventy-five per cent, was for work in the United States.

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In commemoration of the eleventh anniversary of the death of **Dr. Hideyo Hoguchi,** of the Rockefeller Institute for Medical Research, in Accra, West Africa, where he had gone for work with yellow fever, a memorial hall was dedicated at his birthplace in Okinajima, Japan.

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Prof. Joseph Rigney D'Aunoy, professor of pathology and bacteriology at the Medical Center of the Louisiana State University, has been decorated with the Order of Commendatore of the Crown of Italy "in recognition of his achievements in the fields of medical research and education." Until his recent resignation, Prof. D'Aunoy was dean of the Medical Center.

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Dr. Gerald B. Webb received the Trudeau Medal of the National Tuberculosis Association during the annual meeting of the society in Boston, in recognition of his attempts "to produce specific immunity against tuberculosis by the inoculation of animals with very minute numbers of tubercle bacilli." Dr. Webb is research director of the Foundation for Research in Tuberculosis at Colorado Springs.

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Dr. W. G. Barnard, consultant histologist of the Public Health Department of the London County Council, has been appointed to the chair of pathology of the University of London, tenable at St. Thomas's Hospital Medical School.

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Sir Harold Beckwith Whitehouse, Birmingham, was chosen president of the British Medical Association at the annual meeting in Aberdeen, and Dr. Thomas Fraser was installed as president. Sir Ernest Kay Le Fleming, Wimborne, chairman of the council for several years, was elected a vice-president. The Association will meet in Birmingham next year.

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The Royal College of Physicians has made the following awards: the **Baly Gold Medal** to **Dr. C. H. Best,** professor of physiology in the University of Toronto, for his physiological research; the **Moxon Gold Medal** to **Sir Arthur Hurst,** senior physician to Guy's Hospital, for his research and observations in clinical medicine; and the **Weber-Parkes Medal and Prize** to **Sir Pendrill Varrier-Jones,** founder and medical director of the Papworth Village Settlement, for his work on tuberculosis.

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Dr. Vernon L. Hart, of Minneapolis, was awarded the **annual gold medal** of the Southern Minnesota Medical Association for the best scientific exhibit at the Minnesota State Medical Association. Dr. Hart is an instructor in the University of Minnesota Medical School.

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The hundredth anniversary of the presentation of the daguerreotype process of photography to the French Academy by **Louis Jacques Daguerre,** father of photography, was commemorated on August 17 at the Eastman Kodak Building at the World's Fair with the opening of an exhibition of daguerreotype equipment. This included a camera operated by Charles H. Tremaine, the only daguerreotypist in the United States. An original daguerreotype by Daguerre, an 1837 photograph, which is the earliest existing still-life, was on exhibit. There was also an 1845 daguerreotype panorama of Niagara Falls.

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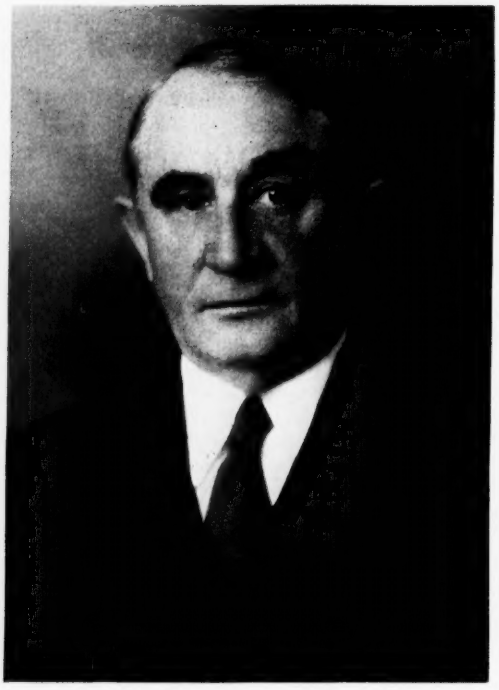
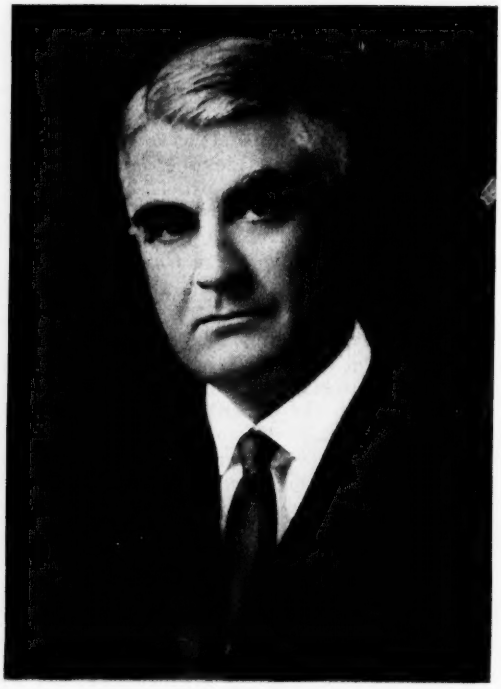
The Committee for the Celebration of the President's Birthday reported August 10 to President Roosevelt that the 1939 drive for funds to aid in fighting **infantile paralysis** netted $1,329,100. The **National Foundation for Infantile Paralysis, Inc.,** organized this year on a nation-wide basis, will administer the fund. Half of the money is to be used for research and the remaining half will be sent to local chapters. The largest part of the proceeds of the drive came from the birthday balls and other events held January 30. The "March of Dimes" campaign raised $217,602.28. Other contributions amounted to $96,971.58.

Obituaries



C. H. Mayo



W. J. Mayo

Charles Horace Mayo, noted as a surgical genius, a great medical administrator and a genial physician, died in Chicago of pneumonia, May 26. The younger of the two world-famed Mayo brothers was born in Rochester, Minn., July 19, 1865, the son of William Worrall Mayo and Louise Wright Mayo. After an education in the Rochester high school and at the Niles Academy he attended Chicago Medical College, later known as Northwestern University, and received his degree in medicine in 1888. As a young boy he began, almost from childhood, to live in a medical atmosphere and to become inspired toward medicine as a career. After his graduation in medicine he returned to Rochester, where his urge toward research and his surgical genius led to innumerable investigations in medicine and in surgery. His first published statement was a joint contribution with his brother, Dr. William J. Mayo, entitled "Report of Clinic in St. Mary's Hospital, Rochester, Minnesota, January 19, 1891," which was published in the *Northwest Lancet* in November of that year. From that time on hardly a year passed without a contribution by either Dr. Charles H. Mayo alone or with his brother, or with some of the younger men who soon became attracted to them. These contributions cover every phase of medicine and surgery and in later years embrace as well the

fields of philosophy, economics and statesmanship.

In the field of scientific medical organizations Dr. Charles H. Mayo was president of the Western Surgical Association in 1904, the Minnesota State Medical Association in 1905, the Society of Clinical Surgery in 1911, the Clinical Congress of Surgeons of North America in 1914, the American Medical Association in 1916, the American College of Surgeons in 1924, the American Surgical Association in 1931 and the Minnesota Public Health Association from 1932 to 1936.

Many of the greatest universities in the world conferred honorary degrees on him. Thus the master of arts degree was conferred by Northwestern University in 1904, fellowship in the Royal College of Surgeons in England in 1920 and in the Royal Society of Medicine in 1926, and master in chirurgery by Trinity College of Dublin in 1925. He was made doctor of public health by the Detroit College of Medicine and Surgery in 1927 and doctor of science by Princeton University in 1917, the University of Pennsylvania in 1925 and the University of Leeds in England in 1909. He also received the honorary degree of LL.D. from the University of Maryland in 1909, Kenyon College in 1916, Northwestern University in 1921, the University of Edinburgh in Scotland in 1925, Queen's University in Belfast, Ireland, in 1925, University of Manchester in England in 1929, Hamline University in 1930, and Carleton College in 1932.

A number of great nations also honored him with citations for distinguished service, the record including officier de l'Ordre national de la legion d'honneur, France, 1925; officier de l'Instruction publique et des beaux-arts, France, 1925, and Cross of Knight Commander of the Royal Order of the Crown of Italy, 1932, as well as citations from many other countries.

During the World War he and his brother, Dr. William J. Mayo, alternated between Rochester, where they maintained graduate study for physicians entering the service, and the personnel department in Washington. They served also as consultants in surgery. Dr. Charles H. Mayo was commissioned Major on April 19, 1917, Colonel June 15, 1918, and Brigadier General Nov. 22, 1921. He received the distinguished service medal of the United States Army on June 7, 1920. With Dr. William J. Mayo he was cited for distinguished service by the National Organization of the American Legion and presented with a commemorative plaque, the special ceremony being conducted by President Franklin D. Roosevelt in person in 1934.

The list of his membership in distinguished civic and medical organizations, both American and foreign, is far too long to list. To many of these he gave personally of himself and of his advice, in others he held honorary membership only. He gave also freely of himself and of his work to many scientific and general publications. He served as health officer of the city of Rochester since May 1, 1912, and as a member of the school board of that city from 1915 to 1923. . . .

Dr. Charles H. Mayo was widely known not only as a surgical genius, as a great surgical teacher, as an inspired organizer, as a leader in medical advancement and as a citizen of his city, county, state and of the nation, but also as a warm hearted, genial, faithful, true humanitarian, easily approachable, unostentatious, ready to trade his wits and banter, always in the most kindly and sympathetic manner. Such men come but infrequently in any civilization and their places are not easily filled as the world moves on.

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Dr. William J. Mayo, former President of the American Medical Association, recognized throughout the world as a brilliant surgeon, a great organizer, an esteemed leader in the field of medicine, died at his home in Rochester, Minn., July 28, aged 78; an operation for perforating ulcer of the stomach had been performed April 22. But a few months have passed since the death of the younger of the two brothers, Dr. Charles H. Mayo. Their careers were inseparable. Their passing from this life so closely together was no doubt as they themselves might have wished it.

The career of Dr. William J. Mayo will be fully recorded in many biographies in which space will be available for proper consideration of its many facets. Since the sixteenth century, the Mayo family has been one closely associated with science. The father of the two boys, Dr. William Worrall Mayo, was born in Manchester, England, May 31, 1819; after training as a physicist and chemist he came to the United States in 1845. In 1847 he removed to Lafayette, Ind., where he studied medicine with Dr. Eleazar Deming. He then completed his medical studies in the University of Missouri and graduated in 1854. After practicing briefly in Laporte, Ind., Dr. William Worrall Mayo removed to Minnesota, settling eventually in Rochester in 1863, where he was in charge of the draft board during the Civil War. The father of these boys was himself a competent surgeon, one of the first physicians in the West to use the microscope, founder of the Minnesota State Medical Association and its president in 1873. Dr. William Worrall Mayo died in Rochester in 1911. He and Mrs. William Worrall Mayo had three daughters and two sons.

The elder son, William James Mayo, was born in LeSuer, Minn., June 29, 1861. The family removed to Rochester when he was slightly over 1½ years old. The boy attended the public school

in Rochester and the high school and thereafter spent one year in a private school for languages and science and two years in Niles academy, During their youth, both William and Charles accompanied their father on his rounds and had an opportunity to observe both surgical operations and postmortem examinations. For a time, both clerked in the drug store. With their father they learned to use the microscope. In 1880, William J. Mayo went to the University of Michigan, Ann Arbor, and completed a three year course which had just been established to replace the former two year medical course. In his medical education Dr. William J. Mayo had an opportunity to be associated with the anatomist Ford and with Victor C. Vaughan, and his training in surgery was under Donald McLean, then professor of surgery. When he was 22, Dr. William J. Mayo completed his medical studies in the university and received his degree.

In November 1884, one year later, Dr. Will married Miss Hattie M. Damon of Rochester. Through many years the close association of Mrs. Mayo with Dr. William J. Mayo in extending hospitality, in the organization of many aspects of the clinic and in carrying a great share of the responsibility for his success and happiness has been widely recognized.

In 1884, Dr. William J. Mayo spent two months in New York City taking the first course given in the New York Post-Graduate School. In 1885 he took a course in the New York Polyclinic. For many years he and Dr. Charles alternated in spending week-ends in Chicago with Christian Fenger. Frequently they traveled abroad to observe surgery as practiced in every nation in the world.

In 1885, Dr. William J. Mayo read his first paper before the Southern Minnesota Medical Association, and his literary contributions to every phase of medical science and art and practice have been innumerable.

From 1889 until 1905, the Drs. Mayo carried on their work in St. Mary's Hospital in Rochester, an institution which they, with their father, had aided in establishing and one which is now known throughout the world largely because of their work. The records of surgical procedures performed indicate an early tendency toward selection of abdominal surgery by Dr. Will, leaving many of the other fields to Dr. Charles. As Dr. Will himself said, "Charlie soon had me driven to cover by being a better surgeon, and I began to specialize in abdominal work and in operations on the ureters and kidneys." As the repute of their work spread, they soon began to associate with themselves younger men who had shown special predilection for surgical work, the first to be selected being Dr. E. Starr Judd, who had charge of the third operating room in 1905. From that time on, the surgical developments in Rochester were so rapid that additional wings continued to be added to the hospital, an annex was opened and additional hospitals were built. As it became apparent that internal medicine and diagnosis, with the work of the laboratory, would be of prime importance, these developments were particularly encouraged. Throughout the record of the growth and development of this monumental institution to the proud position which it now occupies signs of the leadership of Dr. William J. Mayo appear again and again. Early in his career Dr. Will conceived the idea of a permanent endowed institution in Rochester to be connected with a university. He elaborated the concept of the Mayo Foundation and he gave freely of himself, of his funds and of his life for its perpetuation.

The honors and recognition given to him indicate how widely recognized were his achievements for the good of mankind. He was a fellow of the American Surgical Association, of the Royal College of Surgeons and of the College of Physicians of Philadelphia. He received the honorary LL.D. from the universities of Toronto, Maryland, Pennsylvania, McGill, Leeds, Pittsburgh, Carleton, Manchester, Temple and Aberdeen. He received the honorary degree of D.Sc. from Michigan, Columbia, Leeds, Harvard, Marquette and Northwestern universities. He received the honorary M.D. from Trinity College in Dublin and from the University of Havana. He was also a fellow of the Royal College of Surgeons, Ireland, of the Royal Accademia Medica di Roma, of the Royal Society of Medicine of England, of the Royal Australian College of Surgeons, of the Académie de médecine de France. Other recognitions include the gold medal of the National Institute of Social Sciences; the Distinguished Service Medal of the United States Army; the Henry Jacob Bigelow gold medal of the Boston Surgical Society; Royal Order of the Commander of the Northern Star, conferred by His Majesty the King of Sweden; the Finlay Congressional Distinguished Service Medal, conferred by Cuba; the cross of the Royal Order of Knight Commander of the Crown of Italy and the citation for distinguished service given by the American Legion with a commemorative plaque, which was presented by the President of the United States in person in 1934.

Dr. William J. Mayo became associated early with medical organizations. He served as president of his county and state medical associations. He was chairman of the Section on Surgery and Anatomy of the American Medical Association, 1898-1899, and President of the American Medical Association, 1906-1907. He was also President of the American Surgical Association, of the American College of Surgeons, of the Con-

gress of American Physicians and Surgeons, and of the Inter-State Postgraduate Medical Association of North America.

During the World War he was commissioned Major in the Medical Reserve Corps on April 9, 1917, and Colonel of the Medical Corps of the National Army on June 15, 1918. He served as chief consultant for all surgical services during the period of the war and was stationed in the office of the Surgeon-General in Washington. He was commissioned Brigadier-General in the Reserve Corps in 1921 and since then has served at various times as consultant in surgery to the War Department.

His memberships in medical organizations, in military organizations and in civic bodies were far too numerous even for listing. Most of the important foreign medical societies of the world had elected him an honorary member.

His contributions to medical literature, previously mentioned, were well beyond 300 in number, beginning with a report of an operation for ovarian tumor and covering many phases of medical and surgical science, a wide variety of commencement and honorary addresses, a number of descriptive letters of travel and philosophic contributions to the problems of our day.

In 1915, Drs. William J. and Charles H. Mayo donated $1,500,000 to establish the Mayo Foundation for Medical Education and Research in Rochester in affiliation with the University of Minnesota. In 1919 the brothers formed the Mayo Properties Association to hold all the properties, endowments, and funds of the Mayo Clinic to insure the permanence of the institution for public service. Again in 1934 the Mayo Properties Association presented a gift of $500,000 to the University of Minnesota, making a total of $2,800,000 that the brothers had given to the Mayo Foundation. In sending this contribution, Dr. William J. Mayo wrote, in part:

> "Our father recognized certain definite social obligations. He believed that any man who had better opportunity than others; greater strength of mind, body, or character, owed something to those who had not been so provided; that is, that the important thing in life was not to accomplish for oneself alone, but for each to carry his share of collective responsibility. . . . The fund which we had built up and which had grown far beyond our expectations had come from the sick, and we believed that it ought to return to the sick in the form of advanced medical education, which would develop better-trained physicians, and to research to reduce the amount of sickness. . . . The people's money, of which we have been the moral custodians, is being irrevocably returned to the people from whom it came. . . . The practice of medicine in Rochester is carried on in the same manner as by other members of the regular medical profession throughout the state and nation. All classes of patients, without regard to race or creed, social or financial standing, receive necessary care without discrimination. . . ."

These words reflect the great character, the human kindliness, the profound human sympathy that were the part of Dr. William James Mayo. It has been said that opportunity and great occasions make great men. Exception to this rule is present in the lives of Drs. William J. and Charles H. Mayo. They made a small village into one of the most notable medical centers of the world wholly through a genius for surgery and for medical leadership. Throughout their careers they devoted themselves to the advance of scientific medicine and of the medical profession which they served so nobly and which gloried so greatly in their achievements.

In 1906, when Dr. William J. Mayo read his presidential address to the American Medical Association, he forecast and considered some of the great problems that concern medical practice today. He attacked abuses of medical care by public service corporations and the abuse of medical charity by those able to pay. He condemned all attempts by those not trained in the science and art of medicine to dominate its functions. To the very end he contended for this point of view. And in a note written just a few days before his death, he urged continued work for the advancement and stabilization of medical science and the traditions of medical practice.

All the world pauses in the midst of its turmoil and stress to give him honor and to pay him in his death the tribute that is so justly his due—a great physician, a superb surgeon, a magnificent leader, a beloved man!

(J.A.M.A.)

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Prof. Karl Sudhoff, noted German medical historian, died Oct. 8, 1938, at the age of 85.

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Prof. E. C. van Leersum, Dutch medical historian, died Feb. 15, 1938, aged 76.

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Prof. Marcel Labbé, noted Paris clinician, died in May 1938.

WAY SUNG NEW

Way Sung New, B.A. (St. John's), M.D. (Harvard), F.A.C.S., F.I.C.S. (Geneva), one of the most honored members of our Association, passed away on May 4, 1937, after a protracted illness, at the early age of 44.

Born in Shanghai on June 14, 1892, Dr. New lived his early years in that city and received his education at St. John's University, thereafter going to the United States for the medical course at Harvard, followed by a number of interne appointments in that country.

On his return to China, Dr. New held a surgical appointment in the Peking Union Medical College and subsequently settled in Shanghai where the remainder of his working life was spent. Always interested in orthopedic surgery, New's sensitive spirit was deeply grieved by the pitiable condition of the crippled and maimed who too often left the hospital uncured and totally unfitted for the struggle of life, and he decided to devote his own life to their special care and to specialize in orthopedic surgery of which he was already a brilliant exponent.

Following on this he founded the Orthopedic Hospital of Shanghai, becoming its first medical superintendent. To say he founded this hospital is but a poor way of expressing the fact that through his unbounded energy it came into being, that every detail in the hospital was of his own planning, and that in everything except the literal sense he built it with his own hands, ably supported by his talented wife. The hospital was a model hospital of which we Shanghailanders were very proud.

Dr. New soon became the pre-eminent figure in China in orthopedic surgery, the highest in the land turned to him for help along this line and many of the poorest live to bless his name for renewal of life and limb and for a help that made life again worth living.

We have already mentioned New's unbounded energy. This is the only way to describe his activities. No one line of work could suffice, not even his beloved orthopedic surgery. New was as fine an organizer as he was a surgeon and no cause that was great or good failed to make its appeal to him, and what he put his hand to prospered.

His interest in a well organized, high standard medical profession in China was very great and what our Association owed to Dr. New was more than words can say.

On his return from America he was one of the principal helpers in organizing the National Medical Association of China and was the Secretary of its first Conference. Later, and for some years, he was a member of the Executive Committee of the China Medical Association and it was very largely through him that efforts for the amalgamation of the two Associations were crowned with success; in acknowledgment of which he was elected the first President of the amalgamated body, henceforth to be known as The Chinese Medical Association.

Never very robust in health, New's work for the Association was so strenuous that it further weakened him and helped to bring on the illness that finally proved fatal. Refusing to spare himself in the heavy work of preparation for the 1934 Conference in Nanking, he contracted a diphtheritic tonsillitis which led on to nephritis from which he never fully recovered.

Even his illness, however, could not check his work for the Association and in 1935, though in a very precarious state of health, he took over the office of General Secretary till a suitable, younger man could be found and trained for the post; and it was through his energy that the financial campaign which resulted in the Association being able to purchase its own headquarters was brought to a successful issue.

New loved the Association and he loved to visit the Association building. He used to come regularly in the afternoon about four o'clock, even when there were no formal meetings to sit

and chat over the details of every phase of the Association's activities, until it was time to return home for dinner. Many of his thoughts and words on his death-bed were of the Association and of his own love for it.

Space makes it impossible for us to dwell on other of the many activities which engaged Dr. New's attention and to all of which his help was invaluable. It was only during his last weeks that he accepted the post of Secretary to the Council on Medical Missions. New's life was short, but, if time is to be measured not by years but by work, it was longer than many others of twice his age.

Dr. New was a keen Mason and took a prominent position in that body. He was a Member of Scottish Rites Bodies, Shanghai, Member of Islam Temple, A.A.O.N.M.S., San Francisco; Life Member and Founder of Amity Lodge, No. 106, A.F.&A.M., and Founder and Member of Nanking Lodge, No. 108.

Intensely loving himself New was loved by all, especially by his own immediate colleagues, and when his condition required blood transfusion, as latterly it did on a number of occasions, there was no lack of volunteers to render him this service.

He died on May 4, 1937 and was buried in the International Cemetery, Shanghai. The funeral service, attended by several hundred of his many friends, was held at the Funeral Directors on May 11, and he was buried that afternoon with Masonic rites.

Of the many tributes to the memory of Dr. Way Sung New none is finer than that adopted by the Council on Medical Missions which we should like to quote in full:

"Deeply conscious of its loss in the death of its Secretary, Dr. Way Sung New, the Council on Medical Missions of the Chinese Medical Association desires to record its tribute of appreciation for his devoted life.

"Though Dr. New commanded our respect for the distinguished professional position he had attained, he was beloved of us all for something far deeper. He was a constant follower of that Master who 'Came not to be ministered unto, but to minister.' Direct and frank in speech and action, he was always full of grace and kindness.

"To no other physician belongs more credit for the vision and energy that resulted in the amalgamation of the National Medical Association and the China Medical Association into a single body, the present Chinese Medical Association. Both as the first president and, later as Executive Secretary of that body, he was constantly concerned for the work of this Council and for all forms of Christian medical work in China.

"This concern was so deep that, in spite of increasing ill-health, he accepted the Secretaryship of this Council only a month before his death, believing that the time had come for a Chinese Christian physician to enter this field of service, and that it was his own duty to undertake the task.

"Even though he was not able to render active service in the Council, he thought and spoke of its needs repeatedly during the last weeks of his life, conscious that it was the agency which should be used for linking the Christian Hospitals to the Christian Church as well as to the health programs of the constituted authorities.

"To Mrs. New, their son and the other members of Dr. New's family we express our deepest sympathy. We rejoice that we can join with them in gratitude to God for the fragrant memory of his life and for the inspiration to Christian living that he has left us all."

J. L. M.

AN APPRECIATION

China has lost a great human personality. The death of Dr. Way Sung New at his home in Shanghai early on the morning of May 4 removes from leadership, not only a man influential in medicine, but one who was a man of vision and courage in all human relationships.

Born in Shanghai on June 14, 1892, son of the late Shangshow New, an early Chinese student sent to America, Dr. New was always associated with the life of this city. He graduated from St. John's Middle School in 1907, received his A.B. Degree at St. John's in 1910, and his M.D. at Harvard Medical School in Boston in 1914. In 1915-16, he taught anatomy at the Harvard Medical School of China in Shanghai, then returned to the United States for further training in several hospitals.

It was at this time that he received his early impulse to take up orthopedic surgery. He was orthopedic assistant and house surgeon in the Massachusetts General Hospital 1917-18, and continued in this field at Johns Hopkins Hospital, returning to take charge of orthopedic surgery at the Peiping Union Medical College for two years, 1918-20.

Service of the Crippled

No more significant page is to be found in Dr. New's own diary than that which described his determination to invest his life in the service of the crippled in China. In his own words, "I was visiting Nanking one day, and while I was going through a certain hospital, I saw eight or ten men and women in different wards who were apparently cripples. 'What are you doing with

these?' I asked. 'Can't do a thing. Can't dump them out as they have no homes. Just have to wail till the good Lord calls them.' That was the reply.

"I found that there was not a single surgeon in the whole of China specializing in orthopedic surgery. And yet, once my eyes were opened, I found a crying need for orthopedics in every hospital. I did not have to travel to Nanking to find orthopedic cases. There were plenty of them right under my own nose in Shanghai. Can't do a thing. That reply still rang in my ears. Yes, something could be done. 'I'll put orthopedics on the map in China,' I said to myself.

"After looking round some more and after having considered the situation carefully, I announced to my parents that when I returned to the U.S.A. again, I would specialize in orthopedics. They had never heard of this term. Father consulted his medical friends, and they all in one unanimous voice voted that I must be somewhat crazy to pick out this specialty. 'He is 20 years ahead of his time and he would starve before he knew it,' was one remark. The only person who could see eye-to-eye with me was Dr. Henry S. Houghton. His advise was, 'Someone must start this specialty in China; why not you?' Once my mind was made up, I did not waver, and promptly set myself to make my plans."

Associated Nationally

Since 1922, Dr. New had held office as secretary and counsellor in many national medical bodies. He was visiting orthopedic surgeon at the Margaret Williamson of Shanghai; at Soochow Hospital, Soochow, and at Kwangchi Hospital in Hangchow; as well as lecturer in his subject at St. John's Medical School and elsewhere. He established the Orthopedic Hospital in Shanghai—the first of its kind in China—in 1928, in the administration of which he had the devoted assistance of his wife. Two or three years ago he entrusted himself in the orthopedic department of the Kwangchi Hospital, Hankchow, which owes its inception and inspiration so largely to him.

The offices he held were always secondary to the service he determined to render and the influence he exerted in human life. The most significant achievement of Dr. New's life was the amalgamation for which he was chiefly responsible between the National Medical Association of China and the China Medical Association, the latter body being the successor to the China Medical Missionary Association. Dr. New planned for this union for a number of years and rejoiced when it was finally accomplished in 1921.

He became the first president of the new national body, now known as The Chinese Medical Association. He devoted his energy to pushing forward the work of this national medical body, thinking of it by day and dreaming of it by night. Even during the last week of his life, while lying desperately ill, he woke up continually to mention the work of the Association. Dr. New was conspicuous as organizer and co-ordinator, a man of courage and firm in facing difficulties; but always full of grace in his approach to difficult human personalities and situations.

At the Canton Conference of the Chinese Medical Association in 1935, though far below par in physical health, Dr. New undertook the heavy duties of General Secretary and held this office without sparing himself until January, 1937. He spent himself during the last months of his life in training others to carry on the work of the Association.

During the last three months of his life, Dr. New gave more attention than ever to the work of the Council on Medical Missions. He made a remarkable address to the medical missionaries who were gathered in conference on March 31; and on the following day was unanimously elected to be the secretary of the Council on Medical Missions. It was his concern that the Christian medical forces should become closely related to the National Health Administration and all the health activities of China.

He was surgeon-general of the Northern Expeditionary Force, led by Gen. Chiang Kai-shek, in 1927. From that time onward, the Generalissimo became his constant friend and admirer. Since the Sian incident in December, 1936, Dr. New was the Generalissimo's chief professional consultant, so much so that, when the Generalissimo was under treatment in the Chunshan Memorial Hospital a few days ago, it was not uncommon for the attending surgeons to move over to the bedside of Dr. New at his own home to confer with him about the surgical care of the Generalissimo.

A Religious Personality

Dr. New's will reveals his simpleness of taste and his devoted religious personality. Concerned for the well-being of those in need rather than for his own health, he may be described as one who came "not to be ministered unto, but to minister."

At the end of his life, Dr. New was not only the leader of orthopedic surgery in China, but a member of the Commission on Medical Education, and actively related to the advancement of the highest standards in the medical profession of China.

He is survived by his widow and young son Peter, his mother, his brother Dr. Way Ling New, and his sister Mrs. Way Tsung Hsia. Our deepest sympathy goes out to his family, and above all to his widow, who has borne his sufferings with him with devotion and care.

The funeral service was held at the International Funeral Directors at Kiaochow Road, on May 8, at 2 p.m. The first part of the service was conducted with the full Masonic ceremony and the second part conducted by one of the Christian pastors of Shanghai.

E. H. HUME.

We are indebted to Dr. Szeming Sze for the following:

Twenty-two years ago, soon after his return from America, Way Sung New organized the National Medical Association of China, acting as the Secretary of the First Conference, which was held in Shanghai and was attended by some forty members. Seventeen years later, his efforts to unite the National Medical Association and the China Medical (Missionary) Association were crowned with success, he himself being elected first President of the amalgamated body, henceforth to be known as the Chinese Medical Association. One month ago, as many will remember, he participated actively in the Fourth General Conference of the Chinese Medical Association in Shanghai, which was attended by over one thousand delegates. Between his first Conference twenty-two years ago and his last only one month ago, he has consistently played the leading part in this steady growth of the Association, which he has fostered and guided in accordance with the high ideals that have characterized all his acts. Indeed, so much was the work of the Association a part of his life that the history of the Association in those years is the history of his life. He had the work of the Association so much at heart that almost at every hour of the day and night he was thinking of the Association.

Giving his services freely and unselfishly, even to the detriment of his health, he has borne the heaviest responsibilities during the most important years of the Association's history. As President of the newly-created Chinese Medical Association, he guided the Association through the difficult period of its infancy. Later, as Chairman of the Executive Committee, he brought to a glorious conclusion the financial campaign which resulted in the Association being able to purchase its own property. During his recent tenure of office as General Secretary,—a post which he nobly undertook in order to train up younger men for future responsibilities—he established with conspicuous success the Sales Department, the work of which he directed with characteristic energy and enthusiasm. Still more recently he agreed to undertake the duties of Secretary of the Council on Medical Missions, in which work he sought to interest more Chinese doctors. But, his work was not limited to any single office which he might be holding. He was interested in every phase of the Association's work, and was ever ready to offer all the assistance at his disposal. Many delegates at the last Conference will remember his and Mrs. New's generous hospitality when they placed the accommodation of the Orthopedic Hospital at their disposal. Many a time has his private car been used for Association errands, and whenever there was need of equipment (such as surgical tables for the Anti-Venereal Clinic or refrigerator for the Sales Department), he would insist on the Association borrowing these from his hospital to avoid unnecessary expenditure.

He loved the Association and he loved to visit the Association Building. He used to come regularly in the afternoon about four o'clock, even when there were no formal meetings, to sit and chat over the details of every phase of the Association's activities, until it was time to return home for dinner. He had a special gift for all matters connected with building and carpentry, and invariably he would on his regular tours of inspection make some excellent practical suggestion for the structural improvement of this or that feature.

He literally gave his life for the Association he loved so dearly. He exhausted himself in visiting various local branches in 1931, to persuade them to cooperate in the union of the two associations. Refusing to spare himself in the heavy work of preparing for the Nanking Conference in 1934, he contracted then the tonsillitis which later caused complications of nephritis, with its continuous impairment of his health thenceforth. On March 28, 1937, two days before the last Conference, feeling that his health was failing, he wrote his will and at the same time asked to be allowed to enjoy unhindered and to his heart's content all the activities of the Conference as he wanted. To the anxiety of his many friends, he insisted on taking an active part not only in the various business meetings, but also in many social functions. He was particularly interested and happy to see the development of autonomous societies within the Association, and he was unanimously elected the first President of the new Chinese Surgery Society. One event which made him particularly happy was the successful inauguration of the Chinese Pediatrics Society as a Section of the C. M. A. on the evening of April 4, in which he played a decisive role; he was so happy that he came immediately to my house "to tell the good news," although it was after 11 p.m.! The last visit he ever paid was to call at my house in the late afternoon on Sunday, April 11, to discuss some matters connected with the welfare of the C.M.A. staff. That night he awoke suddenly with a rigor and high fever—the beginning of his final illness. In the remaining three weeks—almost to the end—he kept speaking of the Association, as ever remem-

bering every possible detail, and specially enquiring of the progress of the Building Fund Campaign. He spoke of his hopes for the progress of the Association, and of his desire to see the new building contain an attractive library where practitioners would like to come to spend some hours in profitable reading. To the last, he was thinking of the welfare of his colleagues in the profession and in the Chinese Medical Association. How can we ever fill the gap which his passing away has left?

S. S.

CHARLES W. STREAMER

Dr. Charles Walker Streamer, an outstanding surgeon of Southern Colorado, died July 5 of bronchopneumonia.

Dr. Streamer was born in Boulder, Colorado, July 14, 1892. He received both his bachelor of arts and doctor of medicine degrees from the University of Colorado. He joined the medical staff of the Colorado Fuel and Iron Corporation in 1917, and except for about two years of service in the World War, continued in this position until 1925. During the War he served overseas and was in command of the 349th Ambulance Corps of the 88th Division.

Dr. Streamer was a member of the Colorado State Medical Society, a Fellow of the American Medical Association, a Fellow of the American College of Surgeons, and a Fellow of the International College of Surgeons. He was division surgeon of the Missouri Pacific Railroad, a member of the staffs of Parkview and Saint Mary Hospitals, past president of the Pueblo County Medical Society, of the Pueblo Clinical and Pathological Society and of the Missouri Pacific Hospital Association.

He was a member of the First Presbyterian church of Pueblo and of the Masonic fraternity, and was active in civic and social organizations of his city and state.

Surviving are his wife, Mary Robertson; daughter, Mary Martha; and son, Charles Walker, Junior.

Dr. Charles Walker Streamer, respected by all who knew him, admired and beloved by his patients, honored and trusted by his confreres, was called to lay aside the gown and scalpel ere his professional sun had reached its meridian.

Known for his kindness to men of all sorts and conditions, friend of his fellows, servant of his Maker!

HERBERT A. BLACK, M.D.

Dr. Archibald Young, Regius Professor of surgery of the University of Glasgow, Scotland, died July 23, aged 65.

Research in Medicine. By Sir Thomas Lewis, C.B.E., F.R.S., F.R.S.E., M.D., D.Sc., F.R.C.P., Physician in charge of Department of Clinical Research, University College Hospital, London. Price, $2.50. Pp. 79. London: H. K. Lewis & Co., Ltd., 1938.

THIS is a collection of five essays delivered by Sir Thomas Lewis before the British Medical Association, The Royal College of Physicians, The University of Birmingham and the Royal Society. With an excellent training he has devoted more than 30 years to teaching and Clinical Research at the University College Hospital, the results of which are known throughout the world, so that he is qualified to discuss frankly the foundation upon which the profession must stand. His theme is based upon the steadily widening recognition that Clinical Science, besides using for its purposes knowledge derived from physiology and other kindred Sciences, has itself a fundamental contribution to make to Medical Science as a whole. "The inescapable truth is that to cure or to alleviate human disease, research must begin and end in direct studies of sick people. It is palpably clear that physiology, alone and unaided, would be sterile for medicine, it is union of all branches of medical science that gives medical investigation irresistible strength to proceed. Physiologists have to face the fact that the large majority of the students who pass through their hands will encounter in their daily work problems far harder to solve than those with which they themselves deal in their laboratories."

The Science of Medicine was given a legal status in 1140, when Roger II of Sicily issued an edict forbidding any one to practice medicine without proper examination. Surgery was recognized as a specialty when Roger's grandson, Hohenstauffen Emperor, Frederick II, in 1224 issued an edict requiring the candidate to have studied logic three years and medicine and surgery for five years, and to have practiced for one year under some experienced physician. The candidate in surgery had to give evidence that he had studied the art for at least a year, and particularly that he had studied human anatomy, without which no incision can be safely made or any fracture treated. (Translated by J. J. Walsh, *The Popes and Science*, New York, 1908.)

C. E. Black (Trans. West. Surg. Assn., 1935), in a study titled *Our Specialists*, found that only three subdivisions were made in the sixteenth century; 11 more were added in the seventeenth century and six in the eighteenth century. Only 25 of our specialists were born before 1800; all the others, 120, came after that date. Billroth wrote (*Lehren und Lernen der Medizinischen Wissenschaften*), "It is scarcely to be expected that any of the specialties can satisfactorily occupy a talented man for life."

C. C. Burlingame, J.A.M.A., p. 379 (July 29) 1939, expresses the trend of our time, "In fact, I think the day is coming when we shall stop talking about 'mental disease' and 'physical disease' because I am convinced it is an artificial and wrongful separation. The human organism becomes ill, and one cannot separate the human organism into separate entities any more than one can consider it apart from its environment.

In the History of Surgery we have John Hunter, Lord Lister and William Stewart Halsted who followed the tradition established by William Harvey. Every surgeon has an opportunity to study physiology and pathology in sick people. The reviewer feels that this book should be read by every young surgeon to inspire him in his work in the clinic, autopsy room, experimental laboratory and library.

The Clinic of Sir Thomas Lewis has become famous throughout the world during the past 15 years and is based on a tradition established by William Harvey, a tradition that clinical science shall not be confined narrowly or by artificial boundaries, but shall be free to search how and where it will; a tradition which will not countenance attempts to separate the study of health from the study of disease or of man, or work at the bedside from that of laboratories.

W. J. CARSON.

Orthopedic Appliances. By Henry H. Jordan, M.D. Pp. 412, with 377 illustrations. New York, London and Toronto, Oxford University Press, 1939.

THE author is to be praised for his splendid presentation of a subject that has been sadly neglected in this country. His practical suggestions, which are divided into groups based

upon anatomical divisions of the body, are a happy thought, making an easy guide to the use of the book.

The diagrams, illustrations and detailed descriptions of methods of application and construction of apparatus are most helpful and easy to follow.

The publisher should be favorably mentioned and thanked for the choice of type and the excellence of the reproductions.

The book should be invaluable to both the general practitioner who does some orthopedic work, as well as to the experienced orthopedic surgeon.

HORACE E. TURNER.

Fotografia del estomago. By José P. Uslenghi, M.D.; Herbert Hoffmann, M.D., and Joseph Heilpren. Pp. 204, with more than 300 illustrations. Buenos Aires: Aniceto Lopez, Publishers, 1939.

THIS book is a complete contribution on intragastric photography. The time required for this technic and the cost of the apparatus required, as well as the difficulties of interpreting the small and incomplete photographs, have excluded this method of examination to a large extent, and with the advent of the Wolf-Schindler gastroscope the photographic procedure has been used still less. However, it deserves a place in the literature of gastroenterology, and the authors of this work are to be commended on their painstaking study and comprehensive report. The abundance of illustrations testify as to the care and detail with which this subject is handled. Those who read Spanish will find this a very valuable addition to their library.

T.

A Textbook of Surgery. Edited by Frederick Christopher, B.S., M.D., F.A.C.S., Associate Professor of Surgery at Northwestern University Medical School, Chief Surgeon, Evanston (Illinois) Hospital. Second edition, revised. Price, $10 net. Pp. 1695, with 1381 illustrations on 752 figures. Philadelphia and London: W. B. Saunders Company, 1939.

THIS book represents an excellent collection of authoritative surgical monographs. The spontaneous success of the first edition presaged an early revision of the work. The second edition proves its merited reception by the profession. There are 185 contributors, 40 chapters and 1,650 pages in this one volume compilation. The chapter on "Inflammation and Bacteriology" opens the work and well written chapters on pre- and postoperative care close it. The endocrine system is alotted only 34 pages. Diseases of the thyroid gland receive thorough discussion. The principles and treatment of fractures is alotted 177 pages. The subject matter is well presented. The treatment of specific fractures suffers from too much abbreviation to be of distinct value. Atrophy of the testicle is pointed out as a possibility of varicocele operation. Nothing is said as to how to avoid it.

The sections of neurosurgery are excellent. Amputations are discussed in 16 pages, a rather

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